B.2 STATEMENT OF WORK/SPECIFICATIONS

STATEMENT OF WORK
for
Scaled Integrated Voice Communications System
(SIVCS)

1. SCOPE

1.1 This statement of work (SOW) defines the effort required for the system design, fabrication, installation support, and test of a Scaled Integrated Voice Communication System (SIVCS). The SIVCS will be installed in an aircraft carrier and used as a prototype for the development of the next generation Navy interior voice, video, and data communications system.

1.2 Operational Requirements Statement

1.2.1 **Key Relationship:** This Statement of Work (SOW) and the attached specification, PRF CVN65-432-TC3, for the Scaled IVCS (SIVCS) together form the definition of the Navy's intent to procure a hardware set that addresses and improves an ever-growing complex problem of voice communication and information flow within and from a U.S. Navy attack aircraft carrier. By this procurement the Navy intends to acquire a systems level solution for this problem based in contemporary technology that successfully integrates voice, data, and video. The procurement will be a "best buy" selection, based on technical evaluation, with price as an independent variable. The purpose of the Scope portion of the SOW is to articulate a statement of the problem the Navy is attempting to address and to define a set of parameters which define key operational needs. The attached specification has been constructed to represent one possible approach that may satisfy those needs. Within this context the Navy expects that offerers will propose alternative technological and business approaches that respond to the perception of the Navy's needs with imagination and innovation. Multiple proposals from individual vendors are encouraged. The "Instructions to Offerers" portion of this solicitation discusses the Navy's planned approach to evaluate any responding proposal. It is key that Offerers understand that their proposals be structured according to those instructions and detailed to the extent that the proposal may be invoked as a binding part of the awarded contract, and that it defines levels of performance for which the Offeror may be held accountable.

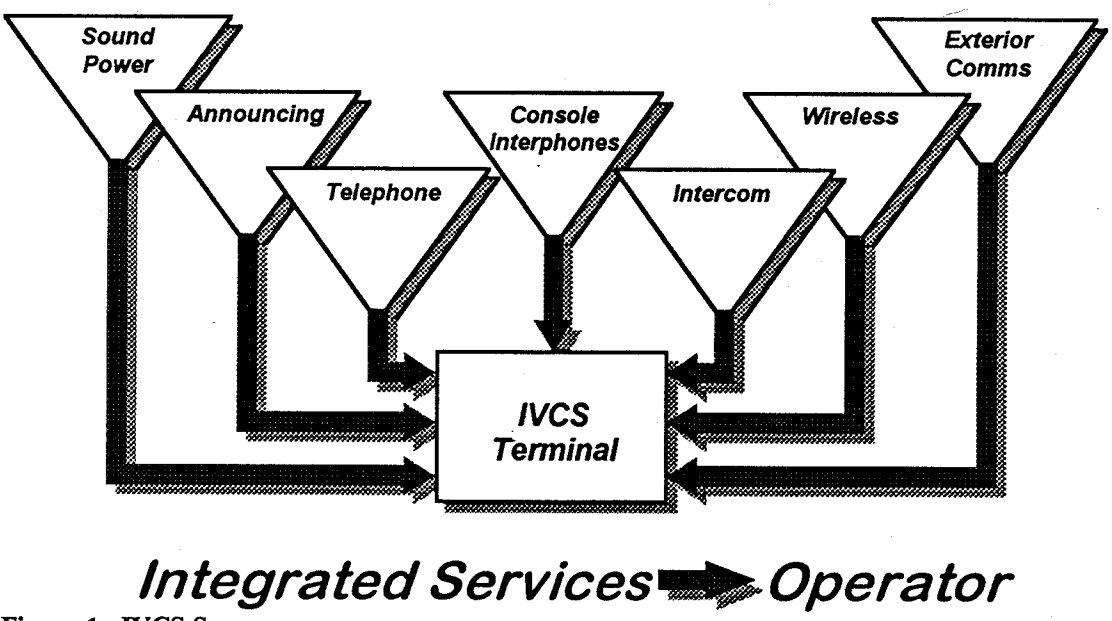

Figure 1. IVCS Scope.

1.2.1.1 Attention is invited to Figure 1 (IVCS Scope) and Figure 2 (Scaled IVCS Architecture). Figure 1 describes the Navy's desire to acquire systems hardware and enabling software that physically integrate communications services of the nature depicted into one user instrument. For the purposes of this document the aforementioned systems hardware, enabling software, and user instrument will be known as the Scaled IVCS or SIVCS. The intended use for SIVCS is application in a US Navy aircraft carrier to serve tactical, administrative, and strategic functions which are key to the war-fighting mission and day to day operations of the ship.

1.2.1.2 Figure 2 (Scaled IVCS Architecture) should be regarded as a "notional" depiction of a representative system architecture intended to aid in the articulation of functions and services the SIVCS is to provide. In this notional sense, the SIVCS will consist of a central switching center (or equivalent) and some number (initially, 40 to 60) of Integrated Terminal Equipments (ITEs). However, the system infrastructure should have the capability to be expanded up to 3000 users who would be served by a family of increasingly capable ITEs.

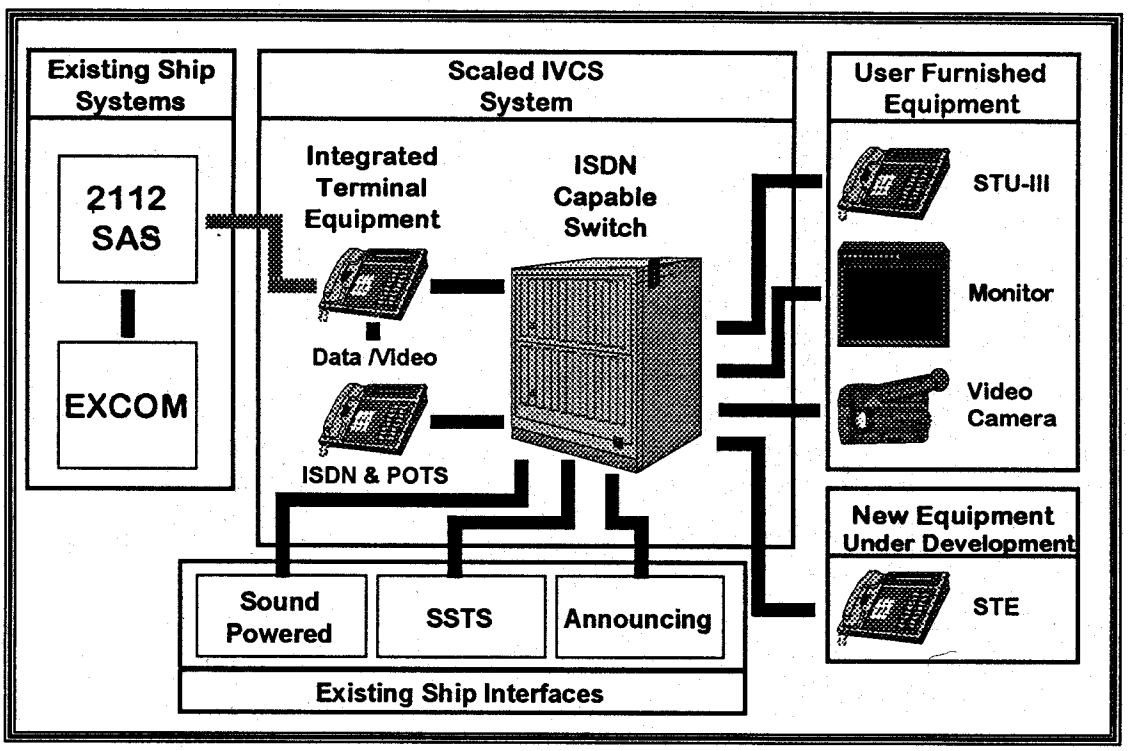

Figure 2. Scaled IVCS Architecture.

1.2.2. **Required Services:**

1.2.2.1 Tactical Radio Access
1.2.2.2 Intercoms:
1.2.2.3 Interphones:
1.2.2.4 Announcing Systems:
1.2.2.5 Telephone, Internal J-Dial
1.2.2.6 Telephone, External POTS
1.2.2.7 Secure and Plain Voice Radio-Telephone via Satellite
1.2.2.8 Sound Powered Phone
1.2.2.9 Wireless Systems Interface (HYDRA)
1.2.2.10 New Equipment (STE)
1.2.2.11 **Data:** ***(The following is provided for informational purposes to assist offerors in understanding some employment scenarios considered likely by the Navy.)*** Various users have a need to use the SIVCS for the transfer of data files when desired for a number of possible applications.

1.2.2.11.1 Data transmission from one location within the ship to another location within the ship (this could include applications such as the transfer of order of battle information from the Flag Staff to the ship's TAO).

1.2.2.11.2. A data link between own-ship and off-ship either over a radio link or telephone hookup (this could be a transfer of stores information).

1.2.2.11.3. An INTERNET-like link between own-ship and ashore component via STEL satellite connectivity to download navigation charts, etc. Data rates fall within the scope of the term "ISDN-capable".

Each of the scenarios imply the use of a PC workstation or laptop connected to the SIVCS either via a port on the ITE or directly to the SIVCS switch, or both. The key concepts are accessibility for the SIVCS user and ease of use.

1.2.2.12 Imagery: ***(The following is provided for informational purposes to assist offerors in understanding some employment scenarios considered likely by the Navy.)*** The SIVCS is envisioned to inherently facilitate the movement and display of imagery for a variety of tactical and administrative functions. These would include the point of use display and manipulation of imagery to include maps and photographic images for mission planning, intelligence, and public affairs purposes. The Navy does not necessarily intend for the ITE to act as the primary display device; however, it may be.

1.2.2.13 Video: ***(The following is provided for informational purposes to assist offerors in understanding some employment scenarios considered likely by the Navy.)*** The SIVCS is envisioned to inherently facilitate the movement and display of video imagery for a variety of tactical and administrative functions. These would include the point of use display of video and voice for teleconferencing for collaborative mission planning, briefings, telemedicine, interactive teletraining, and teletech (maintenance support), religious ministry services, and public affairs services. The Navy does not necessarily intend for the ITE to act as the primary display device for this purpose; however, it may be.

1.2.3 **Concept of Employment and Operations.**

1.2.3.1 SIVCS User Base. The Navy has determined the user base for SIVCS to be those positions key to the ship's Command structure (CO, XO, Department Heads), and those operator positions central to the war-fighting mission of the ship (bridge, flag spaces and command areas, Combat Direction Center and associated areas, aircraft launch and recovery control areas (including Pri-Fly, Flight Deck Control, and squadron ready rooms), and the air traffic control areas). The following list is a preliminary identification of the positions which are anticipated to be initially provided with SIVCS terminals; The Navy does reserve the right to reallocate these positions at any time.

Commanding Officer, In-Port Cabin
Commanding Officer, At-Sea Cabin
Commanding Officer - Bridge
Navigator
OOD, In-Port Quarterdeck
JOOD, In-Port After Brow
OOD, Stern Access Watch Station
Air Officer
Asst Air Officer
Air Handler
Air Ops Officer
TOP Watch Officer
Flag Officer
Flag Officer Cabin
Flag Chief of Staff Officer
Flag TAO
Flag Briefing and Analysis
Flag Plot

Flag Operations Officer
Strike Operations
CVIC - Strike Planning
CVIC - SUPPLOT
Electronic Casualty Control (EMO)
CDC - TAO
CDC - Watch Officer
CDC - ASUW
CDC - ASWM
CDC - EW
CDC - AWO/AREC
CDC - Track Supervisor
CDC - SYSCOM
CAG Office
COMM FACCON
TFCC - OTC
TFCC - TAO
SEWC - EW
FOTC - Force Over the Horizon Tracking
CATCC - Supervisor
CATCC - 16 Console Positions

1.2.3.2 ITE Combined Functionality and Portability of Identity. The Navy's intention is that the SIVCS integrate the user's communication needs in a single user instrument, the ITE. The infrastructure and the ITE would be expected to provide a broad base of capabilities. Within that broad base it is anticipated that the ITE (and, by extension, the infrastructure) will be user configurable to support a specific tailored user profile in terms of service access, features, and functions for that user's unique needs. In addition, offerors are encouraged to propose solutions that address a need for any user station (ITE) to be reconfigured quickly and installed with a new "personality" in circumstances where the user's original ITE becomes inoperable due to failure or damage, or when a particular user has a need to be mobile and is in another physical compartment.

1.2.3.3 Typical **User Scenarios** To restate, para 1.2.3.1 is a listing of the most probable user positions which will be provided the initial SIVCS terminals in the target platform. From that list, several candidate user positions typical of aircraft carrier operations have been selected for discussion in the following paragraphs. The communications needs for individuals working in those positions are also discussed. These discussions are provided to establish rationale for the SIVCS operating characteristics and to facilitate industry's understanding of the user's operating environment. The candidate positions are as follows: (a) Tactical Action Officer (TAO), (B) Air Traffic Control Position (Approach A), (C) Squadron Ready Room (VFA-84).

1.2.3.3.1 **Tactical Action Officer (TAO):** (representative of most Command and Control users)
1.2.3.3.1.1 Job Description: At any given time the TAO is the officer charged with the responsibility to coordinate the engagement of the ship's resources to deal with time present and imminent operational situations. Such situations would include maneuvering in company with other ships, engaging threats with the ship's self defense weapons and aircraft, and alerting various of the ship's internal organizations to deal with emergencies (including in-flight). The TAO must maintain an accurate situational perspective through reference to displays and effective communication with other key individuals within and outside the ship. To engage the ship's resources he must be able to transmit orders accurately, quickly, and efficiently.
1.2.3.3.1.2 Work Space Description: The TAO workspace is typically an open module which is situated in or near the ship's Combat Direction Center (CDC). The module is situated such that the TAO can readily view or gain physical access to a host of display devices and their operators.
1.2.3.3.1.3 Communications Requirements:

(a) Tactical Radio: Single button access to multiple encrypted and in the clear nets for battle group maneuvering and coordination, aircraft communication, weapon's engagement and coordination.

(b) Intercom: Single button, hot line and quick dial access to individuals. Single button, hot line, and quick dial access to predefined groups. User configurable when desired. Conferencing.

(c) Interphone: Single button, hot line, and quick dial access to predefined groups. User configurable when required.

(d) Announcing System: Quick dial access to the ship's general announcing system (1MC) and ability to selectively engage/disengage 1MC speaker groups.

(e) Telephone, Internal J-dial: When and if desired by the terminal user. Ability to make or receive telephone calls to/from any ship's service telephone or properly configured ITE.

(f) Telephone, External POTS: When and if desired by the terminal user. Ability to make or receive telephone calls across the ship's boundary to the PSTN.

(g) Secure RadioTelephone: When and if desired by the terminal user. Ability to make or receive telephone calls via installed satellite communications equipment to/from DOD gateways to the PSTN.

(h) Sound Powered Phone Interface: Single button access to the ship's sound powered telephone network.

(i) Wirefree Systems Interface (HYDRA): Quick dial and dial access when and if desired by the terminal user to telephone interconnect circuitry within the wirefree base station unit. Single button access (with PTT) to Navy-furnished shipboard trunking radio system.

(j) Data: See paragraph 3.a above.

(k) Imagery: See paragraph 3.b above.

(l) Video: See paragraph 3.c above.

(m) Notes: This user position is considered representative of other "tactical terminal" user positions. In some cases, the specific operator or terminal user may be required to perform critical job functions which cannot be interrupted by lower priority communications. Yet, it's likely those same user's will require access to lower priority communications needs from time to time. In those limited cases the Navy may elect to install that operator position with more than one ITE of which either could be user configured uniquely for purpose. The large majority of the other users will be able to function with a terminal/s configured with a "personality" created from the features discussed above.

1.2.3.3.2 **Air Traffic Control (Approach A):**

1.2.3.3.2.1 Job Description: One of about 17 operator positions whose purpose is to perform activities that assure the safe, efficient, and orderly arrival and departure of aircraft to and from the ship. Operations are such that aircraft are routinely being launched and recovered at the same time. Many times arriving aircraft come aboard spaced no more than 45 seconds apart. The position identified as Approach A is typical in its needs. The operator must be capable of communicating over UHF radio (in the clear only) to the aircraft under his control. Moreover he must also be able to communicate with all of the other aircraft controllers by intercom/interphone when necessary. Standards are written which require the operator to be able to access individually and in any combination up to ten (ten) radio circuits simultaneously. At the same time he must be able to access individually and in any combination up to 5 intercom/interphone circuits simultaneously. Additionally, it is common for an instructor to sit behind a trainee on any of the consoles. The instructor must have provision to monitor and when required to override the trainee's communications instantaneously. A supervisor maintains visibility over all of the controllers at a separate location with the control room. The supervisor must have the same capability as all of the other operators for purposes of monitoring their activities. The supervisor must also have the ability to instantaneously select any radio circuit and override both trainee and instructor when necessary.

1.2.3.3.2.2 Work Space Description: CATCC (Carrier Air Traffic Control Center). A control space fitted with radar displays, status boards and communications equipment for the purpose of air traffic control.

1.2.3.3.2.3 Communications Requirements:

(a) Tactical Radio: Single button access for to up to ten (10) unencrypted UHF radios in any combination simultaneously with additional ability to separately select any radio in any combination for monitor only. Additional single button access for any or all of the ten UHF radios to be selected to the user headset or separate associated overhead speaker. These features are necessary to talk to aircraft singly or in groups when required by

circumstance and/or to allow individual controllers to back up others when equipment fails. Provisions for a three-tier level of PTT override (LSO>supervisor> instructor>trainee) are necessary for "*in extremis*" circumstances.

(b) Intercom: Single button access for intercom connectivity to each of the other ATC operator positions in any combination simultaneously with additional ability to separately select any intercom for monitor only. Additional single button access for selecting the user headset or separate associated overhead speaker. ATC operations are complex and quickly paced and frequently require the close coordination of ATC team members with each other.

(c) Interphone: See paragraph (b) above.
(d) Announcing System: Not required.
(e) Telephone, Internal J-dial: Outgoing only, initiated by the user.
(f) Telephone, External POTS: Not required.
(g) Secure RadioTelephone: Not required.
(h) Sound Powered Phone Interface: See paragraph (b) above.
(i) Wireless Systems Interface (HYDRA): Not required.
(j) Data: Not required.
(k) Imagery: Not required.
(l) Video: Not required.
(n) Back-Up Radio: Single button accesss (with PTT) to each of two emergency backup stand-alone radios.
(o) Landing Signals Officer (LSO): PTT override capability required for LSO as described above.

1.2.3.3.3 **Squadron Ready Room:**

1.2.3.3.3.1 Job Description: The squadron ready room serves as a briefing and information dissemination space. Prior to each mission, a pre-flight briefing is given to flight crews. They are provided mission type information to include target, airspace restrictions, frequencies and other support and contingency type data.

1.2.3.3.3.2 Work Space Description: The squadron ready room is arranged with multiple rows of seats all facing a stage or presentation area. Within the space are standard internal communications instruments and minimum projection and display type devices. All briefing information is developed outside the space from the Contingency Theater Automated Planning System (CTAPS) and carried into the room.

In the near future, within the ready room, workstations will be available via the following systems: The Advanced Power Projection Planning and Execution System (APPEX), the Airborne Tactical Information Management System (ATIMS), and the Tactical Aircraft Mission Planning System (TAMPS). These workstations will provide sophisticated, interactive mission planning and rehearsal capabilities and utilize interfaces to on board and off board systems such as the Global Command and Control System (GCCS) and the Joint Maritime Command Information System (JMCIS). The concept of most of these systems is to deliver **real time data, imagery, and video** to both air crews preparing to launch (ready room), and/or air crews already launched and operating within the target or battle region.

1.2.3.3.3.3 Communications Requirements: Communications requirements for the squadron ready room include those needed to support a mix of administration and mission planning functions.

(a) Tactical Radio: Single button access to multiple encrypted and in the clear nets for communications to aircraft and other platforms or assets.

(b) Intercom: Single button, hot line and quick dial access to individuals, and/or pre-defined groups. User configured when required.

(c) Interphone: Not required.
(d) Announcing System: Not required.

(e) Telephone, Internal J-dial: When and if desired by the terminal user. Ability to make or receive calls to/from any ship's service telephone or properly configured ITE.

(f) Telephone, External POTS: When and if desired by the terminal user. Ability to make or receive telephone calls across the ship's boundary to PSTN.

(g) Secure RadioTelephone: When and if desired by the terminal user. Ability to make or receive telephone calls via installed satellite communications equipment to/from DOD gateways to the PSTN.

(h) Sound Powered Phone Interface: Not required.

(i) Wireless Systems Interface (HYDRA): Quick dial and dial access when and if desired by the terminal user to telphone interconnect circuitry within the wirefree base station unit. Single button access (with PTT) to Navy-furnished shipboard trunking radio system.

(j) Data: Data transfer capability will be used extensively in this space.

(k) Imagery: Imagery will be used extensively in mission planning.

(l) Video: Video Teleconferencing is required for collaborative planning within the ship and with other platforms and shore based assets.

1.2.4 **System Characteristics:** This paragraph is intended to reinforce the Navy's essential requirements for the SIVCS for those offerers who may propose an alternative technical approach to that articulated in the SIVCS specification. Offeror's proposals should address these characteristics clearly and in detail sufficient for the Navy to evaluate the merits of same.

1.2.4.1 **Architecture Base: Digital, ISDN-capable.** In this case the Navy considers the term "ISDN-capable" to imply three essential characteristics;

(a) a bandwidth capacity internal to the host user (the ship);

(b) seamless telephone and/or radio-telephone dial interface capability from shipborne user instruments to the outside world which is suitable for transmission of clear and encrypted voice and data, and video; and

(c) a clear relation between the offering's architecture and the general direction of telecommunications technology such as to minimize the Navy's burden to achieve interoperability and an economically reasonable level of logistics support .

The burden to demonstrate the equivalency of proposed architectures to these characteristics is assigned to the offeror.

1.2.4.2 A clear **Command and Control user functionality with guaranteed, rapid vital user connectivity** and the ability to serve administrative needs as necessary with a single type or minimum number of kinds of user terminals.

1.2.4.3 Service Characteristics suitable for accomplishing the ship's **Air traffic Control mission.**

1.2.4.4 **Survivability and redundancy characteristics suitable for warship application,** including rapid reconfiguration of lower priority terminals to substitute for more critical failed/damaged terminals when necessary.

2. APPLICABLE DOCUMENTS

2.1 SIVCS should consist of commercial item equipment provided to best commercial standards. Vendors are to comply with this requirement and identify the standards and methods used to meet performance requirements.

3. REQUIREMENTS

3.1 System. The contractor shall design, assemble, and test the SIVCS in accordance with the provisions of this SOW, and the concepts of the attached specification PRF CVN65-432-TC3. Note that the attached specification is only one of many possible architectural and conceptual approaches to the task. The SIVCS shall consist of the following components.

3.1.1 Basic SIVCS Switch. The Basic SIVCS Switch shall be an ISDN-capable device based on commercial switching architecture using contemporary technology to streamline aircraft carrier C4I/battle management missions. Initially, this switch shall be capable of supporting at least 40 users with the potential of growing to support up to 3000 users. The basic configuration of the Basic SIVCS Switch shall consist of the following

minimum requirements (Note that additional interfaces may be ordered under a separate CLIN as part of the actual system when ordered.):

1) switch system hardware
   a) cabinets, including shock mounts ready to bolt to GFE foundations
   b) cabinet-cabinet cables with connectors
   c) administration/maintenance terminal with required cabling and connectors
   d) system software
   e) cabinet for distribution and interfacing with ship's wiring (NOTE: This is not required to be a separate cabinet.)

2) interface devices (NOTE: The government does not specify how many interfaces per device/card or where the interfaces are located.)
   a) interfaces for (35) AN/WSC-3(V) radios (12 encrypted and 23 clear voice), per PRF CVN65-432-TC3, para 3.2.3.3.1
   b) interfaces for (4) sound powered circuits, per PRF CVN65-432-TC3, para 3.2.3.2
   c) interface for (1) connection to the Navy announcing system, 1MC, per PRF CVN65-432-TC3, para 3.2.3.1
   d) interface for (1) DS1 connection to the SSTS, per PRF CVN65-432-TC3, para 3.2.1.3.5
   e) interfaces for (8) analog station interfaces, per PRF CVN65-432-TC3, para 3.2.1.3.2
   f) interfaces for (4) E&M trunk interfaces, per PRF CVN65-432-TC3, para 3.2.1.3.1
   g) interfaces for (60) BRI connections, per PRF CVN65-432-TC3, para 3.2.1.3.3.1
3) Pre-delivery performance verification
4) Shipping to destination.
5) Post-installation acceptance testing (up to 80 man-hours on site)

3.1.2 SIVCS Integrated Terminal Equipment (ITE). SIVCS ITE shall be configurable to provide access to announcing circuits, sound power phone circuits, video circuits, intercom circuits, console inter-phone circuits, telephone circuits, wireless communications systems, and exterior communications systems directly or by way of the SIVCS switch. The ITE terminal consists of:

1) display/user interfaces (for reference only see PRF CVN65-432-TC3, para 3.1.4.4.1 and 3.1.4.4.2), such as handsets, speaker phones, headsets, remote audio monitor, display screens, selection switches, PTT, keypad, and light controls.
2) enclosure
3) RS-232 data port per PRF CVN65-432-TC3, para 3.1.4.4.2.2
4) interface card positions for minimum of four simultaneous channels (NOTE: If the offeror's design involves removable ITE Terminal devices, the ITE will be ordered without interface devices in place; interface devices will be ordered separately, but will be shipped as part of the ITE terminal.) ITE interface options shall include:
   a) SA-2112(V)/STQ per PRF CVN65-432-TC3, para 3.2.3.3.6
   b) AN/WSC-3(V) per PRF CVN65-432-TC3, para 3.2.3.3.1
   c) BRI per PRF CVN65-432-TC3, para 3.2.1.3.3.2
5) testing
6) shipping to destination
7) Operator/User Quick Reference Cards

3.1.3 1-year Spares Kits. The 1-Year Spare Parts Kits shall consist of all repair/replacement/maintenance parts expected to be necessary to support the system or terminals for one year of service. The actual contents of the kits will be evaluated and negotiated prior to contract award.

3.1.4 Special Tools. Individual items of special tools or test equipment required to maintain, trouble-shoot, and repair the system and terminals will be ordered under a separate CLIN as required.

3.2 Configuration Baseline and Update Information. The contractor shall identify all hardware and software configuration items to part number and revision or serial number, if available. The contractor shall notify the government of all changes to configuration throughout the life of the system, and indicate whether these changes are both forward and backward compatible.

3.3 Software Support. The contractor shall maintain software configuration throughout the life of the system and provide the government the opportunity to acquire updates in the form of a commercial equivalent of an Engineering Change Proposal (ECP).

3.4 Maintenance Planning. The SIVCS COTS maintenance philosophy shall be removal and replacement of defective lowest repairable units (LRUs) at the organizational level (i.e., on the ship by ship personnel), and repair or disposal of the LRUs at the depot level. (NOTE: The government has not yet determined whether to establish, or where to base, a potential depot facility.) The contractor shall define the LRUs. For information, the government usually considers circuit card assemblies as LRUs, except possibly for easily removable PROMs. Based on this philosophy, the contractor shall produce the following maintenance planning documents: Preventative and Corrective Maintenance List, Hierarchical Parts List, Spare parts List, Test Equipment and Tools List (to include general purpose and special purpose test equipment and special tools.)

3.4.1 Preventative and Corrective Maintenance List. This list shall consist of preventative and corrective maintenance actions in accordance with PRF CVN65-432-TC3, para 3.1.20.

3.4.2 Hierarchical Parts List. This list shall consist of a top-down breakdown of the system to the LRU, and shall include at least the following information: Manufacturer's Part Number, Commercial and Government Entity Code (CAGE), Item Name, Circuit Symbol Number/ Reference Designator, Price per Unit of Issue, Production Lead Time, Replacement Factor or Mean Time Between Failure (MTBF), and Quantity.

3.4.3 Spare Parts List. This list shall be a recommended list of on-board spares considered replaceable at the organizational level. Each part to be annotated with the Price per Unit of Issue, and the Quantity required for one year.

3.4.4 Test Equipment and Tools List. This list shall include general purpose and special purpose test equipment, and special tools required for testing, operational and installation checkouts, and repair of the system, terminals, and assemblies. Each item to be identified with Part Number, CAGE, Item Name, and brief description.

3.5 Installation and Checkout. The contractor shall provide support for installation and checkout, including performance of adjustments and repairs, of the entire system and terminals.

3.5.1 Installation. The government will install the system in accordance with contractor-provided installation instructions and control drawings. The installation control drawings shall provide at least the following information:

1) equipment size and mounting dimensions
2) installation limitation, including maximum separations
3) weights, shipping and net
4) cabling requirements, including number of conductors, size, impedance, shielding
5) matching connector part numbers
6) pin assignments for connectors

3.5 2 Adjustments and Repairs. the contractor is responsible for any necessary repairs, adjustments, and replacement of defective components as required to support installation.

3.6 Testing. The contractor shall provide, in the technical proposal, a test plan which ensures compliance with all of the applicable performance requirements, and demonstrates claimed capabilities above stated minimum requirements for the switch, terminals, and interfaces. The test plan shall include a Pre-Delivery performance Verification and a Post-Installation Acceptance Test Procedure. The government will review and may negotiate

changes during contract negotiations. After award, the contractor shall submit for government approval proposed test procedures which implement the approved plan. After government approval of the proposed test procedures, the contractor shall perform the approved procedures and submit test reports. Section 4, Verification, of PRF CVN65-432-TC3 is provided as guidance only, to indicate test procedures which may be necessary to conclusively demonstrate compliance with performance requirements.

3.6.1 Pre-Delivery Performance Verification. The contractor shall prepare a pre-delivery performance verification test procedure. The goal of this test is to demonstrate that a fully operational system; i.e., one that implements all interfaces through demonstration, simulation, or analysis, meets the system's performance requirements. This government will witness this test.

3.6.2 Post-Installation Acceptance Test. The contractor shall prepare a post-installation test procedure to demonstrate that the equipment meets installed performance requirements. The contractor and government will jointly perform the approved test procedures.

3.8 Training Program. The government will utilize contractor-provided training. Contractor shall develop training for the operator/user of the terminals connected to the SIVCS, and training for the administrator/maintainer of the SIVCS. This training is a "not separately priced" item.

3.8.1 Operator/User Training. Contractor shall provide one operator/user training course and materials. The course shall provide experience with terminal equipment and shall cover at least the necessary information, skill development, and practical knowledge required by the student to operate the terminal equipment, including bringing it up after a "cold start" or "warm reset". The course shall be given onboard ship to 20 trainees, and shall not exceed 8 hours.

3.8.2 Administration/Maintenance Training. Contractor shall provide an administration/maintenance training course and materials for the SIVCS system, including the switch and all hardware, terminals, and software. The course shall cover at least a synopsis of equipment use/interfaces, and theory of operation, as well as providing trainees with the necessary information, skill development and practical application required to perform system administration (including light checkout, terminal configuration control, and operating terminal configuration changes), and organizational level maintenance. The course shall be taught for 10 students at the contractor's facility, and shall not exceed 80 hours of instruction.

3.9 Technical data. Contractor shall provide the following technical data:

1) Hardware and Software Configuration and Baseline Information
2) Recommended Preventative Maintenance List
3) Hierarchical Parts list
4) Spare Parts List
5) Test Equipment and Tools List
6) Installation Control Drawings
7) Installation Manual, including any unusual system-specific installation characteristics, system description, and specific procedures
8) Test Procedures
    a) Pre-Delivery Performance Demonstration
    b) Post-Installation Acceptance Test
9) Test Inspection Reports
    a) Pre-Delivery Performance Demonstration
    b) Post-Installation Acceptance Test
10) Engineering and Technical Services Accomplishment Report
11) Lesson Plans
    a) Operator/User Course
    b) System Administration/maintenance Course
12) Trainee guides

a) Operator/User Course
b) System Administration/maintenance Course

13) Instructional Media Package
a) Operator/User Course
b) System Administration/maintenance Course

14) Commercial Off-The-Shelf (COTS) Manuals for all major components; to include preventative and corrective maintenance procedures, and quick reference sheets for terminal users.