

AMENDMENT OF SOLICITATION / MODIFICATION OF CONTRACT				1. Contract ID Code	PAGE
2. Amendment/Modification No. 0007		3. EFFECTIVE DATE 11 JULY 02	4. REQUISITION / PURCHASE REQUEST N66001-2030-62101		5. Project No. (if applicable)
6. ISSUED BY CONTRACTING OFFICER, SPAWARSYSCEN BLDG A33 ROOM 1602W, Code 2212 53560 HULL STREET SAN DIEGO, CA 92152-5000 JACK FAULKNER (619)553-4503 email: jfaulk@spawar.navy.mil		CODE N66001	7. ADMINISTERED BY (If other than Item 6)		CODE N66001
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, state and ZIP + 4 Code)				(X)	9a. Amendment of Solicitation No. N66001-02-R-5999
				X	9b. Dated (See Item 11) 22 MAR 02
					10a. Modification of Contract / Order No. /
					10b. Dated (See Item 11)
CAGE CODE		CEC (facility) CODE			
11. THIS ITEM APPLIES ONLY TO AMENDMENTS OF SOLICITATIONS					
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers [] is extended <input checked="" type="checkbox"/> is not extended.					
<i>Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:</i> (a) By completing Items 8 and 15, and returning <u>1</u> copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.					
12. ACCOUNTING AND APPROPRIATION DATA (If required)					
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.					
(X)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.				
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation data, etc..) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).				
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:				
	D. OTHER (Specify type of modification and authority)				
E. IMPORTANT: Contractor <input type="checkbox"/> Is Not, <input type="checkbox"/> Is required to sign this document and return _____ copies to the issuing office.					
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)					
SEE ATTACHED.					
<small>Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.</small>					
15A. NAME AND TITLE OF SIGNER (Type or print)			16A. NAME OF CONTRACTING OFFICER (Type or print)		
			SHARON M. PRITCHARD		
15B. NAME OF CONTRACTOR		15C. Date Signed	16B. UNITED STATES OF AMERICA		16C. Date Signed
BY _____ (Signature of person authorized to sign)			BY _____ (Signature of Contracting Officer)		

The solicitation is hereby revised as set forth herein:

1) Clause L317, Section 4.3 is replaced with the attached. NOTE: The subject change allows for the offeror to submit the INMARSAT non-standard lease service authorization to the Government after the closing date of the solicitation. Clause FAR 52.215-01 – Instructions to Offerors – Competitive Solicitation (May 2001) applies to this submittal.

2) Attachment 1 - Statement of Work – High Performance Modems & Related Interface Equipment/Services and Specification, pages 17, 18 and 19 are replaced with the attached.

3) Attachment 3 – Technical Evaluation – Written Proposal is replaced in its entirety. Revisions are made to Minimum Technical Requirement Criteria Reference SOW 3.3 – INMARSAT Authorization.

4) Attachment 4 – Technical Evaluation - Demonstration is replaced in its entirety. Revisions are made to the Technical Review Table (Phase I), Reference CATDEP Para. 3.1.1.b / Func Spec Para 3.2.1.15 Auto Transmit Control (Hot Dial, Function 85). Revisions are also made at Technical Review Table (Phase III) Reference CATDEP Para 3.3.1.b / Func Spec Para 3.2.1.15 Auto Transmit Control (Hot Dial, Function 85) and CATDEP Para 3.3.1.d / Func Spec Para 3.2.1.14 & 3.2.1.15 Auto Transmit Control (Hot Dial Function 85)

5) All other solicitation provisions remain unchanged.

4.3 **VOLUME III - WRITTEN CAPABILITY INFORMATION (Technical)** shall consist of the offeror's understanding of the technical requirements, and how the offeror complies with those requirements. Offers which do not present sufficient information to permit a complete technical evaluation by the Government may be rejected. Each technical proposal shall include the following:

Section A – (PHASE ONE) Minimum technical requirements

(1) Each offeror shall submit the information required by Clause L-322, DESCRIPTIVE LITERATURE and L-323, REQUIREMENT FOR TECHNICAL PROPOSAL of this solicitation. Information submitted in accordance with this clause shall be utilized to determine the required compliance with the minimum requirements identified in Attachment One (1) of this solicitation. (Refer also to Clause L-321, COMPLIANCE TO MINIMUM SPECIFICATIONS of this solicitation.)

INMARSAT authorization for operational compliance for non-standard lease services shall be provide within 3-days of notification that the prospective offeror has successfully completed phase one written requirement. INMARSAT non-standard lease service authorization is required prior to the phase two demonstrations.

(PHASE TWO) Mandatory Demonstration

Offerors meeting the minimum technical requirements will then be required to demonstrate the system interoperability and performance requirements in Phase Two to the evaluation. Phase Two will consist of an "On-Site" Evaluation hosted by the offeror for certain requirements that would be difficult to evaluate in a written proposal. All demonstrations will be in accordance with **Attachment 4**, "Technical Evaluation Demonstration."

The On-Site Demonstration will take no more than one-hundred and twenty (120) hours beginning with the arrival of the evaluation team. Offerors will not be allowed to videotape the demonstrations. Demonstrations will be scheduled as soon as practicable after evaluation of the written portion of the proposal. Demonstrations shall be completed within 45 days of the RFP closing date. The order in which offerors will perform their demonstrations will be determined by a drawing of lots by the contact specialist and witnessed by the contracting officer. Once a date and time for the demonstration is coordinated between the offeror and the Government, requests from offerors to reschedule the date and time of their demonstration will not normally be entertained; however, the Government may choose, at its discretion, to grant the request. Unsuccessful requests for rescheduling of the demonstration shall not be judged by the Government to be a valid basis for protest.

Section B - Past Performance

(a) Offerors shall provide information on a minimum of three (3) previous Government contracts whose effort was relevant to the effort required by this solicitation; the contracts provided should have been performed within the last 5 years. If the Offeror has not had three (3) Government contracts within the last 5 years, information on relevant subcontracts and/or commercial contracts may be submitted instead. This information shall be provided by the submission of Attachment 7 - "Reference Information Sheet" for each contract.

- f. 25° E AOR-E LEASE
- g. 109° E IOR LEASE
- h. 142° W POR LEASE

3.2.1.13. 128Kbps Synchronous Data: Operating in conjunction with the Saturn-Bm terminal, the integrated High Performance Modem and related interface equipment shall provide the capability for supporting 128 kbps enhanced service on the Lease Channel satellite coverage zones defined in 3.2.1.12 of this specification. The 128kbps enhanced data service shall provide reliable operations in 100kHz of satellite bandwidth spectrum. Bit Error rate measured at the modem's data port shall equate to 10^{-6} or less 99% of the time (performance parameters equivalent to INMARSAT SDM requirements for Standard Lease Mode services).

3.2.1.14. Antenna Hand-over Capability: Operating in conjunction with the Saturn-Bm terminal that includes the antenna handover modification, the integrated High Performance Modem and related interface equipment shall neither degrade nor inhibit the systems capability to provide hand-over, or automatic switching between antennas to maintain a continuous line of sight to the satellite.

3.2.1.15. Automatic Link Establishment: Operating in conjunction with the Saturn-Bm terminal, the integrated High Performance Modem and related interface equipment shall provide the capability for supporting automatic link establishment (i.e. Hot Dial) functionality of the "Hot Dial" Function on the Saturn-Bm terminal. By changing the state of the Data Terminal Ready (DTR) signal being provided to the (DCE) High Performance Modem Data Port, the system should automatically establish a data call with the designated Land Earth Station Operator.

3.2.1.16. Operator Interface Control & Monitor: Operating in conjunction with the Saturn-Bm terminal, the integrated High Performance Modem and related interface equipment shall neither degrade nor inhibit the Saturn-Bm's operator interface (MCU Handset) from displaying/reporting system information as well as allowing operator interaction with various system functions including but not limited to; signal level, alarm status & information, ocean region information, antenna position, heading information, port configurations, and handset illumination control.

3.2.2. Physical Characteristics: The integrated High Performance Modem and related interface equipment shall consist of 19 inch rack mountable units. The designated equipment shall include all the required interface cables including RF/IF transmission, control, and power cables as required for connection into the Saturn-Bm terminal and external power supply.

3.2.2.1. Weight: The integrated High Performance Modem and related interface equipment weight installed shall not exceed 26 pounds.

3.2.2.2. Dimensions: The Saturn-Bm terminal below deck equipment is installed in a Navy shipboard equipment rack that measures 19 inches wide by 60 inches high by 20 inches deep. The integrated High Performance Modem and

related interface equipment shall be installed into the same equipment rack. The volume available for the High performance modem and related interface equipment is specified in below.

a. Hardware unit(s) (W x H x D) inches cubed--19 x 6 x 20

3.2.2.3. Equipment Interconnection: The integrated High Performance Modem and related interface equipment shall be interconnected with the Saturn-Bm terminal below deck equipment by interconnection cable(s). The interconnection cable(s) shall be capable of allowing full communication operation (data, and system command/control).

3.2.3. Maintainability: Maintenance actions for the integrated High Performance Modem and related interface equipment configuration shall include organizational level and vendor level support. Organizational maintenance shall be conducted by ship's force, Fleet Technical Support Centers (FTSC's), and SPAWAR System Center technical representatives using manufacturer supplied equipment/information and general purpose test equipment and tools. Maintenance actions shall consist of module replacement to the Lowest Replaceable Unit (LRU). Defective modules will be shipped to a shore-based activity for OEM repair, replacement, or disposal. The maintenance depot shall be a contractor facility, e.g. OEM.

3.2.4. Environmental Conditions: The integrated High Performance Modem and related interface equipment shall comply with the environmental specifications listed in sections 3.2.4.1 through 3.2.4.2.

3.2.4.1. Ambient Temperatures: The integrated High Performance Modem and related interface equipment shall operate under the following temperature conditions: 0°C to +50°C

3.2.4.2. Relative Humidity: The integrated High Performance Modem and related interface equipment shall operate in relative humidity of up to 95 percent.

3.3. Design and Construction: The integrated High Performance Modem and related interface equipment shall meet and/or exceed all performance specifications relating to design and construction requirements specified by this document.

3.3.1.1. Electromagnetic Susceptibility: The integrated High Performance Modem and related interface equipment configuration shall meet or exceed all Electromagnetic Emissions and Electromagnetic Susceptibility specifications specified in 3.3.1.1 through 3.3.1.2.

3.3.1.1.1. Electromagnetic Emissions: The integrated High Performance Modem and related interface equipment configuration shall meet and/or exceed all requirements specified in FCC part 15, Class B for Radio Frequency Devices as well as the emission requirements specified in EN 55022 Class B.

3.3.1.1.2. Electromagnetic Susceptibility: The integrated High Performance Modem and related interface equipment configuration

shall meet or exceed all requirements specified in EN 50082-1 immunity requirements.

- 3.3.1.2. Safety: The integrated High Performance Modem and related interface equipment shall be designed, fabricated, shielded and operationally configured to meet or exceed all safety requirements specified in EN 60950.

4. QUALITY ASSURANCE PROVISIONS.

- 4.1. General: The integrated High Performance Modem and related interface equipment configuration shall conform to the quality assurance provisions specified in section 4.1.1. and 4.1.2

4.1.1. Responsibility for Inspection: Unless otherwise specified in the contract or purchase order, the performance of all tests, verifications and certifications are the responsibility of the contractor.

4.1.2. Quality Conformance Inspection: The integrated High Performance Modem and related interface equipment configuration shall conform to all the requirements specified in this document. The absence of any inspection requirements in this specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

5. PACKAGING.

- 5.1. Preservation, Packaging, Packing, and Marking. Unless otherwise specified herein, preparation for delivery shall be in accordance with applicable levels of preservation, packaging, and marking specified in ASTM D-3951 for commercial procedures and tested in accordance with ASTM D-4169.

6. NOTES.

- 6.1. INMARSAT Authorization: It shall be the Manufacturer's responsibility to ensure that the High Performance Modem and related interface equipment achieves all required INMARSAT authorizations. As a minimum, the manufacturer shall provide a written declaration of conformance from the INMARSAT Organization which states that 1) the proposed equipment does not invalidate the existing Saturn-Bm terminal INMARSAT Type Approval, 2) the proposed equipment does not invalidate the Saturn-Bm terminal INMARSAT CN-17 Approval Status, and 3) the proposed equipment meets all INMARSAT operational compliance requirements for non-standard lease services supported by INMARSAT-B High Performance Modem and related interface function specification.
- 6.2. System Interoperability: The integrated High Performance Modem and related interface equipment configuration shall neither inhibit nor degrade the current functionality of the Saturn-Bm system.

Attachment 3
TECHNICAL EVALUATION WRITTEN PROPOSAL

Minimum Technical Requirements Criteria			
Reference	Technical Proposal Criteria	Rating: Satisfactory or Unsatisfactory	Comments
SOW	<p>Statement-of-Work Offerors shall provide a written statement verifying that they shall meet all requirements of the Statement of Work supported by a summary description of their technical ability and approach to providing the required equipment and services.</p>		
SOW 3.3 Func Spec 6.1 Func Spec 3.2.10 Func Spec 3.2.1.13	<p>INMARSAT Authorization Offerors shall provide a written declaration of conformance from INMARSAT that 1) the proposed equipment does not invalidate the existing Saturn-Bm terminal INMARSAT Type Approval, 2) the proposed equipment does not invalidate the Saturn-Bm terminal INMARSAT CN-17 Approval, 3) The proposed equipment meets all INMARSAT operational compliance requirements for non standard lease services.</p> <p><u>The INMARSAT authorization for operational compliance for non-standard lease services shall be provide within 3-days of notification that the prospective offeror has successfully completed phase one written requirement. INMARSAT non-standard lease service authorization is required prior to the phase two demonstrations.</u></p> <p><u>As part of the phase one proposal, the Offer shall also provide a copy of the non-standard lease service application that was submitted to INMARSAT for achieving the operation compliance for non-standard lease service. In addition, the offeror shall provide a signed and dated statement validating that the copy of the service application submitted to the government was identical to the one that was submitted to INMARSAT for authorization and that the submittal was accomplished prior to the proposal due date.</u></p>		
SOW 3.4	<p>Interim Spares Support Offeror shall provide a recommended spares list that identifies each LRU that can be removed and replaced shipboard. At a minimum, the information should include: Manufactures Part Number, Item Description and Mean Time Between Failure.</p>		
SOW 3.6.1	<p>Technical Manuals Offerors shall provide Manuals for the organizational level of operation and maintenance of the system. These Manuals shall be evaluated for comprehensiveness and usability.</p>		
SOW 3.10.4	<p>Pre-planned Product Improvement Offerors shall be required to submit a technical</p>		

	<p>report (10-page limit) indicating that the proposed equipment has the capability of supporting a non-channelized service by modifying the systems existing firmware and or software.</p>		
<p>Sec H-901</p>	<p>Equipment Warranty (Variance) Offerors shall provide a written Statement from the Saturn-Bm OEM (Nera, Norway) that their product does not invalidate the Saturn-Bm terminals and antenna handover units manufactures warranty. If the Offeror does not have an OEM endorsed statement for warranty validation, the Offeror shall provide a plan for supporting the Saturn-Bm terminal and antenna handover unit warranty. The plan shall include information on world-wide service support and Saturn-Bm terminal parts availability for non OEM warranty support.</p>		
<p>Func Spec 3.1 Func Spec 3.1.1 Func Spec 3.2.1.8</p>	<p>System Configuration Definitions Offeror shall provide supporting documentation that clearly illustrates how 1) the proposed High Performance modem and related interface equipment are integrated with the Saturn-Bm System including both MK-I and MK-II Antenna configurations and antenna handover. As a minimum, the information should discuss signal flow and power requirements placed on the Saturn-Bm System by the High Performance Modem and related interface equipment. 2) How the proposed system configuration can be reconfigured to support 9.6kbps asynchronous data (via the MCU) on the on-demand satellite network.</p>		
<p>Func Spec 3.2.1.13 Func Spec 3.2.1.3 <u>SPAWAR Systems</u> <u>Command satellite</u> <u>lease services</u> <u>contract N00039-</u> <u>02-D-3204, SOW</u> <u>Para 3.1.1.5</u> <u>(Satellite Power)</u></p>	<p>128kbps Synchronous Data Offeror shall submit technical documentation that clearly demonstrates that the proposed equipment is capable of providing reliable 128kbps in 100khz of Satellite Bandwidth.</p> <p>As a minimum, the documentation shall include modem configuration, including modulation method and Forward Error Correction scheme. A detailed link budget analysis including available margin for degradation.</p> <p>The link budget analysis shall be based on the following conditions: 1) Clear weather, 2) Earth referenced MES antenna angle of 5°, unobstructed, 3) INMARSAT F2 Satellite. 4) Earth referenced LES antenna angle of 5°-12°, unobstructed. 5) Required BER of 10⁻⁶. 6) MES EIRP of 33dBW in the return direction. 7) Satellite EIRP of 21.9dBW in the forward direction.</p> <p>Validating test documentation shall include the test setup, test equipment configuration, block diagrams, spectral plots, test data and any other supporting information that was used to verify that spectral requirements are met and/or exceeded.</p>		

Func Spec 3.2.2.2	Equipment Dimensions Offeror shall provide documentation verifying that the High Performance modem and related interface equipment are rack mountable within the volume designated. As a minimum, the documentation shall include a three-dimensional <u>pictorial drawing or equivalent photograph</u> including measurement indications.		
Func Spec 3.2.1.15	Automatic Link Establishment Offeror shall submit technical documentation that clearly demonstrates that the proposed equipment is capable of supporting the HotLine signaling function on the Saturn-Bm terminal.		

Attachment 4
TECHNICAL EVALUATION DEMONSTRATION

1.0 SCOPE

The Contract Award Technical Demonstration Evaluation Plan (CATDEP) provides instructions to TEB members for evaluating Offeror's High Performance Modem and related interface equipment demonstration. In addition, requirements are provided for hardware configurations, test configurations, and evaluated criteria.

2.0 GENERAL REQUIREMENTS

The test configurations depicted in figures 1 through 3 of the CATDEP are required to validate system performance. Demonstrations shall be performed at the Offeror's facility. The Offerors shall provide all equipment required for the demonstration including the High performance modems and related interface equipment required at the INMARSAT Land Earth Station to support connectivity. Exceptions are listed in the required material list in Table 1. Satellite lease channel space segment shall be provided by the government. A government designated Land Earth Station will be used to support government performance monitoring requirements. This support shall consist of monitoring and reporting system power levels, looping back government provided space segment leases, and reporting Bit Error Test set readings as required by the government. For verification of required performance parameters, a government representative shall be stationed at the Land Earth Station for the duration of the required testing.

2.1 High Performance Modem & related interface equipment testing shall be conducted with the Nera Saturn-Bm System (MK-II antenna variant). Specific tests will require the integrated Nera antenna handover unit.

2.2 As specified in this instruction, the Offerors shall be ready to perform the required tests on the day and time that was previously arranged through the contracting officer. The offeror shall have their Saturn-Bm terminals, High Performance Modems & related interface equipment, antenna handover unit, test jigs, Spectrum Analyzers, Bit Error Rate Testers (BERT), and required Land Earth Station connectivity in place or readily available for setup within 30 minutes of the Governments arrival at the Offerors designated test facility.

2.3 In the unforeseen event of hardware failure during a required test event, the Government shall allow the vendor up to 24 hours to repair the system and proceed with the required test event. If the faulty unit cannot be repaired within 24 hours, the government reserves the right to reschedule the test event.

2.4 Enclosure (1) of this attachment provides the government's minimum technical requirements for equipment performance in the Technical Review Tables. TEB members shall annotate any clarifications and comments to the test observations in enclosure (2). Each entry shall be initialed and dated.

2.5 If any of the required test results fail to meet the minimum government requirements (receive a unsatisfactory rating) then the Offeror shall be disqualified.

3.0 TEST PROCEDURES

The demonstration shall be conducted in three phases. Phase one shall consist of validating Saturn-Bm system interoperability with the High Performance Modem and related interface equipment. Phase two shall verify system performance when providing enhanced 128kbps and 64kbps services. Phase three shall consist of validating system interoperability between a Saturn-Bm system configured for antenna handover operation and the High Performance Modem and related interface equipment.

3.1 Saturn-Bm Terminal Interoperability Requirements

3.1.1 Phase one configuration shall consist of the Saturn-Bm terminal test setup (figure 1. Diagram) with the High Performance Modem & related interface equipment installed and operational. The offeror shall demonstrate that the minimum required handsets functions listed in the phase I system interoperability table are available during a 128kbps connection and idle condition.

- a. The government representatives shall verify that the test configuration, required equipment, and specified cable lengths, are in accordance with the prescribed requirements. The lead government

Representative shall then sign and date the appropriate block in the phase I system interoperability table of enclosure (1).

b. The government representatives shall validate that the BERT is in synch and data is flowing. Once the data link is verified, the government representatives shall verify operation of all applicable handset functions listed in the phase I system interoperability table of enclosure (1). The lead government Representative shall annotate the observed results as satisfactory or unsatisfactory and then sign and date the appropriate block in enclosure (1) after each functional verification test is complete.

c. The government representatives shall first verify that the Saturn-Bm terminal is configured and active in the external modem mode, and that the High Performance modem and related interface are activate with no data connection established (idle mode). The government representatives shall then verify operation of all applicable handset functions listed in the phase I system interoperability table of enclosure (1). The lead government Representative shall annotate the observed results as satisfactory or unsatisfactory and then sign and date the appropriate block in enclosure (1) after each functional verification test is complete

3.2 System Performance Requirements

3.2.1 Phase two configuration shall consist of three Saturn-Bm terminals with High Performance Modems & related interface equipment. Each system test configuration setup shall adhere to the figure 1 diagram. Initial baseline testing shall consist of validating standard 64kbps lease service in the presence of adjacent satellite channels providing 128kbps enhanced service. The satellite spectrum shall be allocated so that the standard 64kbps channel is operating between adjacent 128kbps channels. One of the three Saturn-Bm terminals shall be initially configured for standard 64Kbps lease service (no external modem). The two other systems shall be configured to support 128Kbps enhanced service. Three adjacent 100KHz channels shall be provided for all required testing. The 2047 pattern on each BERT shall be selected for all testing. In order to establish a baseline for the required power levels, data connectivity shall be first established for standard 64kbps lease service. The Land Earth Station shall be contacted to verify that the standard 64kbps lease service is operating at required power levels. Signal level amplitude shall be visually approximated on a spectrum analyzer. The peak signal level of the standard 64kbps lease service shall be used as a means of verifying 128kbps enhanced service power levels. Once data connectivity is established on all three systems, the BERT on the center channel (64Kbps standard service) shall be monitored periodically for system performance. At various intervals, bit error loss and average bit error rate shall be noted. Test duration shall be 24-hours. During the initial test, relative signal peak amplitude levels on the three adjacent channels shall be compared for equivalence to ensure each required service is operating at the required power level (21.9dBW in the forward direction). Signal level amplitudes shall be visually approximated on a spectrum analyzer. For the next test evolution, each system shall be configured to support 128kbps connectivity. Once data connectivity is established on all three systems, the BERT on the center channel (128kbps enhanced service) shall be monitored periodically for system performance. At various intervals, bit error loss and average bit error rate shall be noted. Test duration of shall be 24-hours. During the test, the Land Earth Station shall be contacted to verify that the enhanced 128kbps service is operating at the required power levels. Relative signal peak amplitude levels on the three adjacent channels shall be compared for equivalence to ensure that the required service is operating at a power level that is consistent with the previous test. Verification of power levels shall be done with the assistance of the Land Earth Station Operator (LESO) that is supporting each test evolution.

a. The government representatives shall verify that the test configuration, required equipment, and specified cable lengths, are in accordance with the prescribed requirements. The lead government Representative shall then sign and date the appropriate block in the phase II system performance table in enclosure (1).

b. Using one system configured to support standard 64kbps connectivity, the offeror shall established a single data session. After the BERT is verified in synch with data following, the LESO shall be contacted to confirm that the standard 64kbs lease service is operating at the required power levels. With one system configured to support 64kbps standard service and the other two systems configured to support 128kbps connectivity, the offeror shall establish three simultaneous data sessions. After all three BERT's

are visually verified to be in sync with data flowing, and the LESO has been contacted and has provided verbal verification that terminal transmit power and shore station transmit power are within specification, the lead government representatives shall record the test start time and the sign and date the appropriate block in enclosure (1). The duration of the test is 24-hours.

c. During the 24-hour link quality test, the offeror shall have a spectrum analyzer set-up to display the three adjacent 100KHz channels. The analyzer shall be connected to the directional coupler as depicted in figure 1. Spectrum analyzer should be set-up to display a 500KHz span that encompasses the three adjacent 100KHz channels. The government representatives shall visually verify that three adjacent channels are present in 300KHz of contiguous bandwidth. The government representatives shall also visually verify that the relative signal peak amplitudes are approximately the same for each carrier. Approximately shall be defined as within 1dB with the spectrum analyzer amplitude scale setting of 2dB/DIV (logarithmic scale). In addition, the government representatives shall visually verify that the 128kbps channel when measured at the 3db point resides within 100KHz. For 100KHz visual verification, the spectrum analyzer shall be set-up to display a 200KHz span that encompasses the center channel with an amplitude scale setting of 2dB/DIV (logarithmic scale). The lead government Representative shall then annotate the observed results as satisfactory or unsatisfactory and then sign and date the appropriate block in enclosure (1) after each visual verification test is complete. The lead government Representative shall then sign and date the appropriate block in enclosure.

d. After conclusion of the 24-hour link quality test, the government representatives shall visually verify that the measured average bit error rate is 10^{-6} or less as displayed on the BERT connected to the system operating on the center channel at the offeror's facility. For the BERT supporting data connectivity on the center channel at the LESO's facility, the government shall contact the appropriate LESO personnel to verify that the measured average bit error rate is 10^{-6} or less. The lead government Representative shall then annotate the observed results as satisfactory or unsatisfactory and then sign and date the appropriate block in enclosure (1) after each visual verification test is complete. The lead government Representative shall then sign and date the appropriate block in enclosure (1).

e. With each system configured to support 128kbps connectivity, offeror shall establish three simultaneous 128kbps data sessions. After all three BERT's are visually verified to be in sync with data flowing, and the LESO has been contacted and has provided verbal verification that terminal transmit power and shore station transmit power are within specification, the lead government representatives shall record the test start time and the sign and date the appropriate block in enclosure (1). The duration of the test is 24-hour.

f. During the 24-hour link quality test, the offeror shall have a spectrum analyzer set-up to display the three adjacent 100KHz channels. The analyzer shall be connected to the directional coupler as depicted in Figure 1. Spectrum analyzer should be set-up to display a 500KHz span that encompasses the three adjacent 100KHz channels. The government representatives shall visually verify that three adjacent channels are present in 300KHz of contiguous bandwidth. The government representatives shall also visually verify that the relative signal peak amplitudes for this link quality test approximately the same for each carrier. Approximately shall be defined as within 1dB with the spectrum analyzer amplitude scale setting of 2dB/DIV (logarithmic scale). In addition, the government representatives shall visually verify that the 128Kbps channel when measured at the 3db point, resides within 100KHz. For 100KHz visual verification, the spectrum analyzer shall be set-up to display a 200KHz span that encompasses the center channel with an amplitude scale setting of 2dB/DIV (logarithmic scale). The lead government Representative shall then annotate the observed results as satisfactory or unsatisfactory and then sign and date the appropriate block in enclosure (1) after each visual verification test is complete. The lead government Representative shall then sign and date the appropriate block in enclosure.

g. After the conclusion of the 24-hour link quality test, the government representatives shall visually verify that the measured bit error rate is 10^{-6} or less as displayed on the BERT connected to the system operating on the center channel at the offeror's facility. For the BERT supporting data connectivity on the center channel at the LESO's facility, the government shall contact the appropriate LESO personnel to verify that the measured average bit error rate is 10^{-6} or less. The lead government Representative shall then

annotate the observed results as satisfactory or unsatisfactory and then sign and date the appropriate block in enclosure (1) after each visual verification test is complete. The lead government Representative shall then sign and date the appropriate block in enclosure (1).

3.2.2 To validate the 64kbps enhanced service, the offeror shall use the same phase two configuration as was used to demonstrate the 128kbps enhanced service. The configuration shall consist of three Saturn-Bm terminals with High Performance Modems & related interface equipment. Each system test setup shall adhere to Figure 1. Two systems shall be configured for 64kbps enhanced service. The third system shall be configured for 128kbps connectivity. For the enhanced 64kbps service, relative signal amplitudes shall be compared for equivalence to ensure each required service is operating at the required power level (18.9 dBW in the forward direction for the enhanced 64kbps service and 21.9 dBW in the forward direction for the 128Kbps enhanced service). Signal level amplitudes shall be visually approximated on a spectrum analyzer. During the test, the Land Earth Station shall be contacted to verify that the enhanced 64kbps service and enhanced 128kbps service are operating at the required power levels. Two adjacent 100KHz channels shall be provided for testing. One of the 100KHz channels shall support two 64kbps enhanced lease channel operating in 50KHz each. Once data connectivity is established on all three systems, two 64kbps enhanced leases and one 128kbps enhanced lease, the BERT operating on the 50KHz channel (enhanced 64kbps lease service) that is segmented between the other 50KHz channel and 100KHz channel shall be monitored periodically for system performance.

a. With two systems configured to support enhanced 64kbps service and one system configured to support 128kbps connectivity, offeror shall establish three simultaneous data sessions, two 64kbps and one 128kbps. After each of the BERT's are visually verified to be in sync with data flowing, and the LESO has been contacted and has provided verbal verification that terminal transmit power and shore station transmit power are within specification for enhanced 64kbps and enhanced 128kbps service, the lead government representatives shall record the test start time and the sign and date the appropriate block in enclosure (1). The duration of the test is 24-hours.

b. During the 24-hour link quality test, the offeror shall have a spectrum analyzer set-up to display the two adjacent 100KHz channels. The analyzer shall be connected to the directional coupler as depicted in figure 1. Spectrum analyzer should be set-up to display a 500KHz span that encompasses the two adjacent 100KHz channels. The government representatives shall visually verify that three adjacent carriers, two 64Kbps and one 128Kbps, are present in 200KHz of contiguous bandwidth. The government representatives shall also visually verify that the relative signal peak amplitudes for this link quality test are approximately the same for each carrier. In addition, the government representatives shall visually verify that the 64kbps carrier, when measured at the 3db point resides within 50KHz. For 50KHz visual verification, the spectrum analyzer shall be set-up to display a 100KHz span that encompasses the center channel with an amplitude scale setting of 2dB/DIV (logarithmic scale). The lead government Representative shall then annotate the observed results as satisfactory or unsatisfactory and then sign and date the appropriate block in enclosure (1) after each visual verification test is complete. The lead government Representative shall then sign and date the appropriate block in enclosure (1).

c. After the conclusion of the 24-hour link quality test, the government representatives shall visually verify that the measured bit error rate is 10^{-6} or less as displayed on the BERT connected to the system operating on the center channel at the offerors facility. For the BERT supporting data connectivity on the center channel at the LESO's facility, the government shall contact the appropriate LESO personnel to verify that the measured average bit error rate is 10^{-6} or less. The lead government Representative shall then annotate the observed results as satisfactory or unsatisfactory and then sign and date the appropriate block in enclosure (1) after each visual verification test is complete. The lead government Representative shall then sign and date the appropriate block in enclosure (1).

3.3 Antenna Hand-over Interoperability Requirements

3.3.1 Phase three configuration shall consist of the Saturn-Bm terminals and antenna handover test setup (Figure 2 diagram) with the High Performance Modem and related interface equipment installed and operational. Please note that the Government is not requiring the offeror to install the SLIP ring modification on either of the Saturn-Bm MK-II antennas that are required for antenna hand-over testing. The demonstration can

be accomplished in lieu of the SLIP ring modification. If requested by prospective offerors, the Government shall make available DAS unit(s) on temporary loan. One DAS unit shall be provided per offeror under the following conditions: 1) The prospective offeror shall be required to provide two of the three INMARSAT Serial Numbers (ISNs) from the contractor furnished Saturn-Bm terminals required to support the demonstration. The ISN shall be used to acquire the corresponding opening key code to support the DAS unit. 2) After the receipt of hardware and corresponding firmware keycode, the offeror shall be required to notify the government within 3-days of any problems with the DAS unit. If problems are uncovered, the government reserves the right to provide the offeror a replacement unit. If no problems are reported the Contractor excepts all responsibility for operating and supporting the DAS during the required demonstration. The offeror shall demonstrate that the minimum required handsets functions are available during stand-alone mode when both systems are configured to operate independently, and when the antenna handover unit is active and both systems are configured for antenna handover operation. Additionally, the offeror shall demonstrate that the proposed equipment is capable of operating during an antenna hand-over evolution. Using the test configuration setup in Figure 3, a synchro-transmitter/receiver shall be used to simulate a shipboard gyro providing Own Ships Heading, 60 Hz information. The Government furnished synchro tester shall be provided at time of demonstration. Upon completion of the testing, the Government shall retain custody of the synchro tester.

a. The government representatives shall verify that the test configuration, required equipment, and specified cable lengths, are in accordance with the prescribed requirements. The lead government Representative shall then sign and date the appropriate block in the phase III antenna handover interoperability table in enclosure (1).

b. With each Saturn-Bm terminal configured for stand-alone operation and the antenna handover unit set for standalone operation, the offeror shall demonstrate the minimum required hand set functions are available during stand-alone mode on the Saturn-Bm unit designated as the main (unit-A). The government representatives shall validate that BERT is in synch at a data rate of 128kbps. Once the data link is verified, the government representatives shall verify operation of all applicable handset functions listed in the in the phase III antenna handover interoperability of enclosure (1). The lead government Representative shall then annotate the observed results as satisfactory and unsatisfactory and then sign and date the appropriate block in enclosure (1) after each functional verification test is complete.

c. With each Saturn-Bm terminal configured for stand-alone operation and the antenna handover unit set for standalone operation, the offeror shall demonstrate the minimum required hand set functions are available with no data connection established (idle mode) on the Saturn-Bm unit designated as the main (unit-A). The government representatives shall verify operation of all applicable handset functions listed in the in the phase III antenna handover interoperability of enclosure (1). The lead government Representative shall then annotate the observed results as satisfactory and unsatisfactory and then sign and date the appropriate block in enclosure (1) after each functional verification test is complete.

d. With each Saturn-Bm terminal configured for antenna hand-over operation and the antenna handover unit set for hand-over operation, the offeror shall demonstrate the minimum required hand set functions are available prior to commencing an antenna handover evolution on the Saturn-Bm unit designated as the main (unit-A). The government representatives shall validate that BERT is in synch and data link of 128kbps is established. Once the data link is verified, the government representatives shall verify operation of all handset functions listed in the phase III antenna handover interoperability of enclosure (1). The lead government Representative shall then annotate the observed results as satisfactory and unsatisfactory and then sign and date the appropriate block in enclosure (1) after each functional verification test is complete.

e. With each Saturn-Bm terminal configured for antenna hand-over operation and the antenna handover unit set for hand-over operation, the offeror shall demonstrate the minimum required hand set functions are available with no data connection established (idle mode) prior to commencing an antenna handover evolution on the Saturn-Bm unit designated as the main (unit-A). The government representatives shall verify operation of all applicable handset functions listed in the phase III antenna handover interoperability of enclosure (1). The lead government Representative shall then annotate the observed

results as satisfactory and unsatisfactory and then sign and date the appropriate block in enclosure (1) after each functional verification test is complete.

f. The government representatives shall verify that the test configuration, required equipment, and specified cable lengths, are in accordance with the prescribed requirements. The lead government Representative shall then sign and date the appropriate block in the phase III antenna handover interoperability table in enclosure (1)

g. With each Saturn-Bm terminal configured for antenna hand-over operation and the antenna handover unit set for hand-over operation, the offeror shall demonstrate modem interoperability during an antenna hand-over evolution by using a simulated gyro source (Figure 3: Synchro tester connection) to drive the main antenna (Antenna-A) into a preprogrammed block zone causing a handover to the backup antenna (Antenna-B). It is anticipated that during the antenna hand-over evolution, that the BERT will lose N-bits and in an extreme case lose synch. However, the BERT should recover automatically and continue to send and receive data. The government representatives shall first confirm the successfully antenna hand-over evolution by observing the transmit carrier transfer from the spectrum analyzer that is monitoring antenna-A to the spectrum analyzer monitoring antenna-B. Next the government representative shall validate that BERT has successfully recovered and is in synch and data is flowing. The lead government Representative shall then annotate the observed results as satisfactory or unsatisfactory and then sign and date the appropriate block in enclosure (1) after each functional verification test is complete.

MATERIAL LIST

ITEM	QTY	ITEM NAME	PART, TYPE OR MODEL NUMBER	MANUFACTURER NAME/NSN NUMBER	REMARKS
1	3	ANTENNA, Bm ADE MK2	QUFF 911 09-3	NERA TELECOMMUNICATIONS	Contractor Furnished SEE FIG 1 & 2
2	3	COUPLER, DIRECTIONAL	3002-20	NARDA	Contractor Furnished SEE FIG 1 & 2
3	2	SPECTRUM ANALYZER	HP8563E OR EQUIV.	HEWLETT PACKARD	Contractor Furnished SEE FIG 1 & 2
4	1	DUAL ANTENNA SWITCH	101438	NERA TELECOMMUNICATIONS	Contractor Gov't Furnished * SEE FIG 2
5	500ft Total **	CABLE, FLEXIBLE, COAXIAL, 50 OHMS	RG/214	M17/164-00002	Contractor Furnished SEE FIG 1 & 2
6	12	CONNECTOR, N-SERIES RF	KN-59-176	KINGS, M39012/01-0005	Contractor Furnished SEE FIG 1 & 2
7	2	CABLE, M/M DB9	EDN12H-0005-MM	BLACK BOX	Contractor Furnished SEE FIG 2
8	3	MCU	QUFC 911 901-2	NERA TELECOMMUNICATIONS	Contractor Furnished SEE FIG 1 & 2
9	3	POWER SUPPLY 10-34VDC	QUFC 911 903-2B	NERA TELECOMMUNICATIONS	Contractor Furnished SEE FIG 1 & 2
10	3	HAND SET	QDGS 911 903	NERA TELECOMMUNICATIONS	Contractor Furnished SEE FIG 1 & 2
11	2	CCA, GYRO	QROF2199003	SEATEL	Contractor Furnished SEE FIG 1, 2 & 3
12	2	XFMR, 115 AC TO 15 DC	112561	SEATEL	Contractor Furnished SEE FIG 3
13	3	CONNECTOR, TNC-SERIES RF	KA-51-19	KINGS	Contractor Furnished SEE FIG 1 & 2
14	3	BERT, W/RS-530 OPTION	FIREBERD 6000A	TELECOMMUNICATIONS TECHNIQUES CORPORATION	Contractor Furnished SEE FIG 1 & 2 Interface to be determined by test facility.
15	20ft Total	CABLE, GYRO INTERFACE	LS2SU-3 OR SIMILAR	JCH WIRE & CABLE	Contractor Furnished SEE FIG 3
16	1	SYNCHRO TESTER	1998308	CARBONARA LABS	Gov't furnished SEE FIG 3 ***

* Government shall make available the DAS on temporary loan. After the receipt of hardware, the prospective offeror shall be required to notify the government within 3-days of any problems with the DAS unit. If problems are uncovered, the government reserves the right to provide the prospective offeror a replacement unit. If no problems are reported the Contractor accepts all responsibility for operating and supporting the DAS during the required demonstration.

** See Figures 1 & 2 For Required Cable Lengths

*** Government shall provide the Synchro Tester on temporary loan at time of demonstration.

TABLE 1.

Single System Configuration

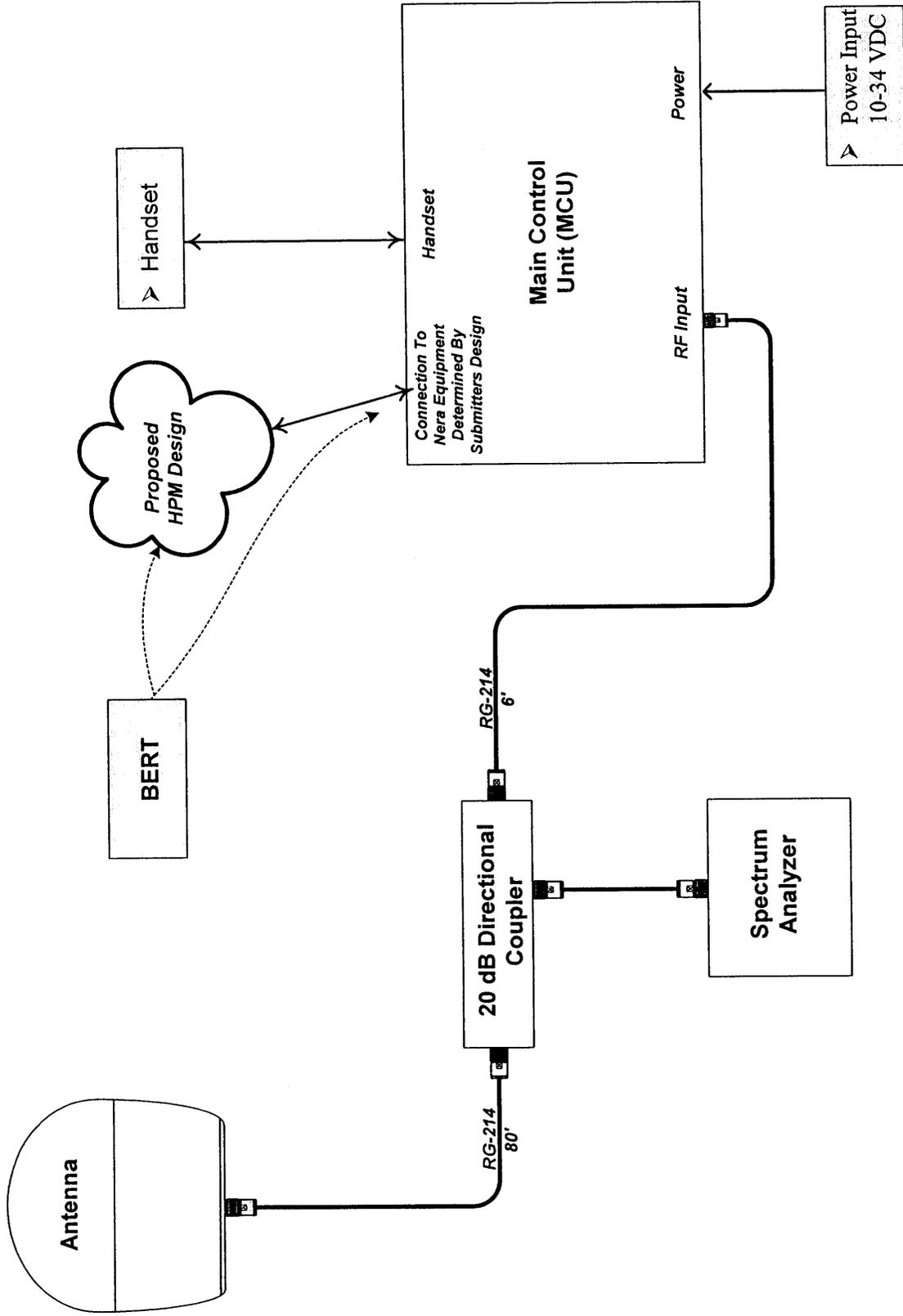


Figure 1.

Dual Antenna Handover System Configuration

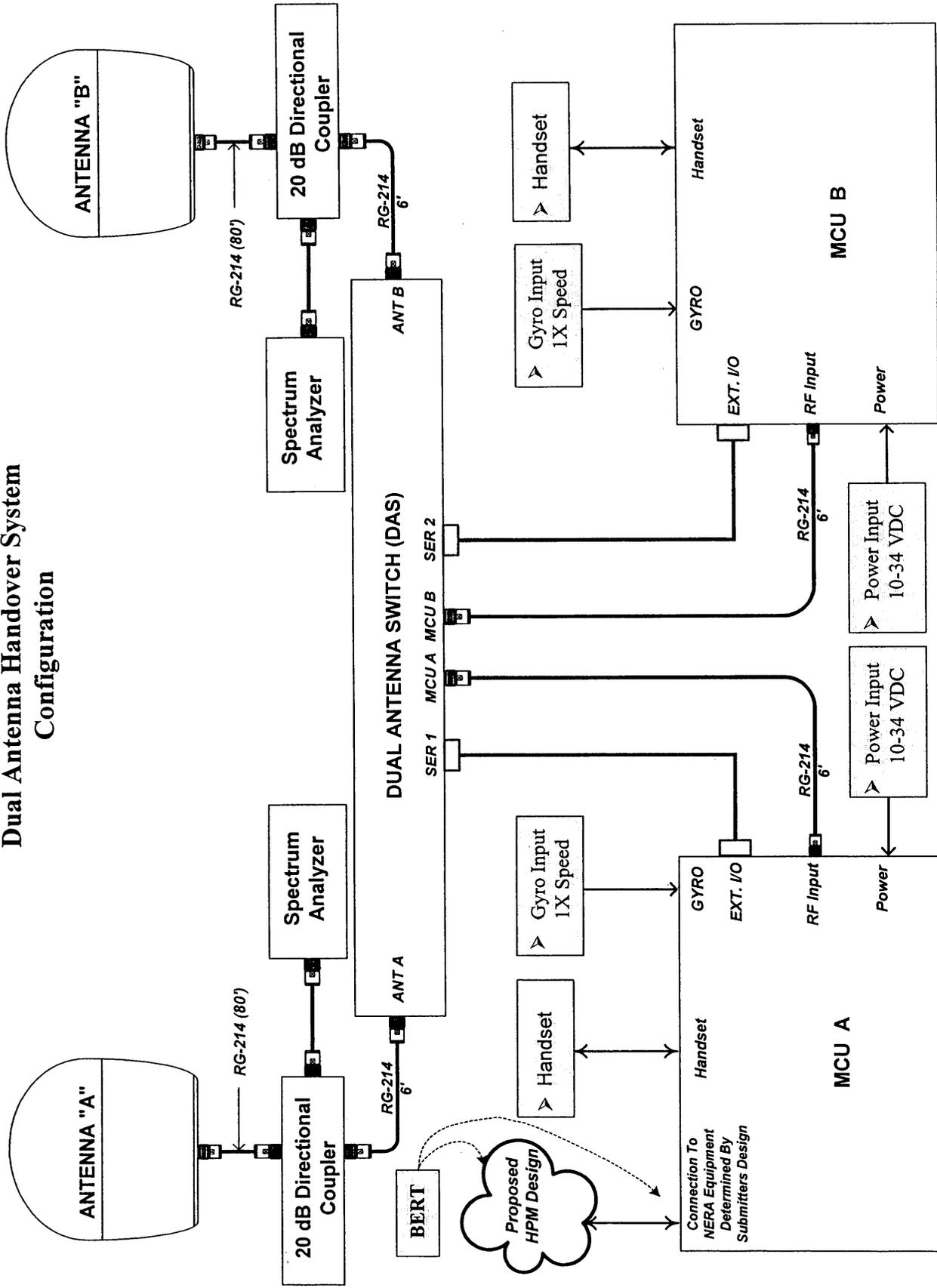


Figure 2.

GYRO Interface Configuration

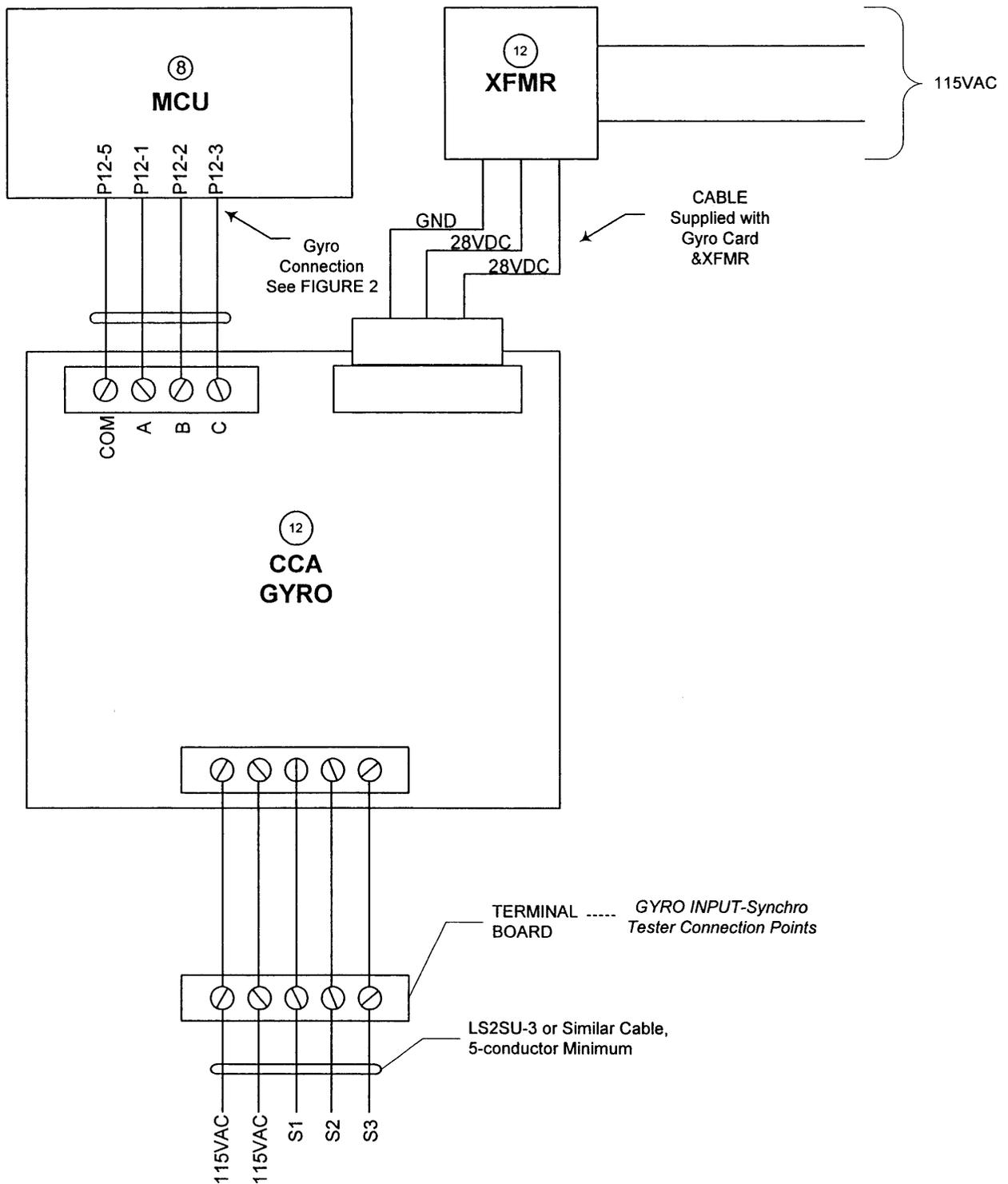


Figure 3.

Technical Review Table (Phase I)

Offeror : _____

System Tested: _____

PHASE I System Interoperability Required Saturn-Bm Terminal Functions				
Reference	Required Function	Demonstration Criteria	Rating: SAT or UNSTAT	Signature/Date
CATDEP Para 3.1.1.a	Demonstration Configuration Provide basis for system interoperability testing	Equipment Configuration verify that the test configuration, equipment and specified cable lengths are in accordance with requirements listed in Figure 1 and table 1.		
CATDEP Para 3.1.1.b Func Spec Para 3.2.1.15	Auto Transmit Control Data path DTR handshaking signal controls call establishment and cessation	(Hot dial, Function-85) With the Saturn-Bm terminal configured for Hot Dial (Function-85) and the BERT connected to the High Performance Modem, the data control signal (DTR) state shall be changed by toggling the DTR Key on the BERT. 1) Transmit signal should be displayed on the spectrum analyzer. 2) 128Kbps Data flow should be observed on the BERT		
CATDEP Para 3.1.1.b Func Spec Para 3.2.1.11	Emission Control (EMCON) Provides a means to have positive control of all transmit signal outputs. External EMCON control required for MUTE capable ships.	MCU EMCON Key Switch With the spectrum analyzer configured to monitor the transmit signal, the EMCON Key is turned to enable EMCON. 1) The transmit signal should no longer be displayed. 2) The handset should provide a visual indication that transmit is disabled.		
CATDEP Para 3.1.1.b Func Spec Para 3.2.1.7	Terminal Alarms Provides alarm or important message notification via flashing triangle symbol on the handset	Handset Display With the Saturn-Bm terminal configured for printer (function 77) and 128Kbps data connectivity established, the printer power switch shall be turned Off. 1) The terminal handset shall display a flashing triangle symbol. 2) 128kbps data flow shall be verified on the BERT		
CATDEP Para 3.1.1.b Func Spec Para 3.2.1.7	Active Alarms Provides listing of current active system alarms	Handset Display, Function 30 Continued from the Terminal alarms validation (printer power OFF and observed flashing triangle). 1) Function 30 shall display the printer alarm		
CATDEP Para 3.1.1.b Func Spec Para 3.2.1.7	Information Log Provides historical list of system alarms and faults that is used for monitoring the	Handset Display, Function 31 Continued from Active alarms. 1) Function 31 shall display a list of system alarms and faults.		

Enclosure 1

	terminals operational status and troubleshooting.			
CATDEP Para 3.1.1.b Func Spec Para 3.2.1.7	Clear Cause Log Provides abnormal conditions that have caused the call to be cleared. Information is logged as it occurs. Used for monitoring terminal operation status and troubleshooting.	Handset Display, Function 32 Continued from Active alarms. 1) Function 32 shall provide a list indicating why previous calls were cleared. If no list is available the government representative shall verify access to function 32 on handset.		
CATDEP Para 3.1.1.b Func Spec Para 3.2.1.16	Signal Level Provides indication of the receive signal level. Must be viewable when the terminal is in idle mode and busy with a call. Used to verify antenna pointing and receive system readiness.	Shift+7, Function 27/28 With the High Performance Modem system active and 128 data connectivity established. 1) Pressing the Shift Key followed by the 7 key will display a signal level. 2) Function 27 and 28 shall also display Signal levels along with antenna position		
CATDEP Para 3.1.1.b Func Spec Para 3.2.1.12 Para 3.2.1.16	Current Ocean Region Provides indication of current satellite selected and is used for changing to a different satellite	Handset Display, Function 20 With the High Performance Modem system active and 128 data connectivity established. 1) Function 20 shall display current satellite.		
CATDEP Para 3.1.1.b Func Spec Para 3.2.1.4 Para 3.2.1.5 Para 3.2.1.6	Search for Satellite Provides capability to search for a satellite when the exact pointing angles are unknown	Handset Display, Function 26 With the High Performance Modem system active and no data call established. 1) Function 26 shall display the search for satellite prompt.		
CATDEP Para 3.1.1.b Func Spec Para 3.2.1.4 Para 3.2.1.5 Para 3.2.1.6	Antenna Absolute Position Provides capability to view and position the antenna to desired pointing angles, plus provides the current S/N levels.	Handset Display, Function 27 With the High Performance Modem system active and 128 data connectivity established. 1) Function 27 shall display antenna position and signal level.		
CATDEP Para 3.1.1.b Func Spec Para 3.2.1.16	Read/Set Compass Indicates the current gyro input heading and provides the capability to correct. This is required for periodic updates to the heading	Handset Display, Function 29 With the High Performance Modem system active and 128 data connectivity established. 1) Function 29 shall display current heading position.		
CATDEP Para 3.1.1.b Func Spec Para 3.2.1.16	Display and Key Light Controls illumination of the display and keys for view under all ambient light conditions	Handset Display, Shift+9 With the High Performance Modem system active and 128 data connectivity established. 1) Pressing SHIFT key followed by the 9 Key should activate the display light.		

Enclosure 1

<p>CATDEP Para 3.1.1.c</p> <p>Func Spec Para 3.2.1.16</p>	<p>Configure Ports Provides a means to toggle the Saturn-Bm terminal DTE port between data modes to prevent auto dialing when not authorized. Also used when troubleshooting the system</p>	<p>Handset Display, Function 70 With the High Performance Modem system active and no data call established. 1) Function 70 shall display current data port configuration.</p>		
<p>CATDEP Para 3.1.1.c</p> <p>Func Spec Para 3.2.1.4 Para 3.2.1.5 Para 3.2.1.6 Para 3.2.1.16</p>	<p>Relative Antenna Position Provides the capability to manually steer the antenna, plus provides the current S/N levels</p>	<p>Handset Display, Function 28 With the High Performance Modem system active and no data call established. 1) Function 28 shall display antenna position and signal level. 2) Current antenna azimuth shall be edited to a new value of existing azimuth plus 20° 3) Antenna change in position shall be confirmed by loss of signal.</p>		

Technical Review Table (Phase II)

Offeror : _____

System Tested: _____

PHASE II System Interoperability System Performance Requirements				
Reference	Required Function	Demonstration Criteria	Rating: SAT or UNSTAT	Signature/Date
CATDEP Para 3.2.1.a.	Demonstration Configuration Provide basis for system performance testing	Equipment Configuration Verify that the test configuration, equipment and specified cable lengths are in accordance with requirements listed in Figure 1 and table 1.		
CATDEP Para 3.2.1. b. Func Spec Para 3.2.1.3 Para 3.2.1.9 Para 3.2.1.12 INMARSAT SDM	Standard 64K Lease Service Legacy service will be required during transition to 128kbps lease service	64Kbps Performance- legacy Verify 64Kbps performance in the presence of adjacent channels providing 128Kbps With all three BERT's verified in synch with data connectivity established. 1) LESO confirmation of 64kbps legacy power levels. 2) LESO validation that terminal transmit power and Shore transmit power are in specification for 128kbps service.3) Record 124-hour test start time.	1) LESO Verbal Confirmation 2) LESO Verbal Validation 2) Test Start Time.	
CATDEP Para 3.2.1.c. Func Spec Para 3.2.1.3 Para 3.2.1.9 Para 3.2.1.12 INMARSAT SDM	Standard 64K Lease Service Legacy service will be required during transition to 128kbps lease service	64Kbps Performance- legacy Verify 64Kbps performance in the presence of adjacent channels providing 128Kbps With all three BERT's verified in synch with data connectivity established. 1) Visually verify that 3 carriers are present in 300KHz of contiguous bandwidth. 2) Visually verify that the three signal peak amplitudes		

		are approximately equivalent. 3) Visually verify that the 128Kbps carrier resides within 100KHz.		
<p>CATDEP Para 3.2.1 d.</p> <p>Func Spec Para 3.2.1.3 Para 3.2.1.9 Para 3.2.1.12</p> <p>INMARSAT SDM</p>	<p>Standard 64K Lease Service Legacy service will be required during transition to 128kbps lease service</p>	<p>64Kbps Performance-legacy Verify 64Kbps performance in the presence of adjacent channels providing 128Kbps With all three BERT's verified in synch with data connectivity established. 1) Record Test Stop time 2) Visually verify that the measured bit error rate is 10^{-6} or less as displayed on the BERT monitoring the center channel. 3) LESO verification of measured bit error rate (10^{-6} or less at shore site).</p>	1) Test Stop Time.	
			2) MES BERT	
			3) Shore BERT	
<p>CATDEP Para 3.2.1.e.</p> <p>Func Spec Para 3.2.1.3 Para 3.2.1.12 Para 3.2.1.13</p> <p>INMARSAT SDM</p>	<p>Enhanced 128K Lease Service High performance Modem and related interface equipment required to support enhanced service.</p>	<p>128Kbps Performance Verify 128Kbps performance in the presence of adjacent channels providing 128Kbps With all three BERT's verified in synch with data connectivity established. 1) LESO validation that terminal transmit power and Shore transmit power are in specification. 2) Record 24-hour test start time.</p>	1) LESO Verbal Validation	
			2) Test Start Time.	
<p>CATDEP Para 3.2.1.f.</p> <p>Func Spec Para 3.2.1.3 Para 3.2.1.12 Para 3.2.1.13</p> <p>INMARSAT SDM</p>	<p>Enhanced 128K Lease Service High performance Modem and related interface equipment required to support enhanced service.</p>	<p>128Kbps Performance Verify 128Kbps performance in the presence of adjacent channels providing 128Kbps With all three BERT's verified in synch with data connectivity established. 1) Visually verify that 3</p>		

		carriers are present in 300KHz of contiguous bandwidth. 2) Visually verify that the three signal peak amplitudes are approximately equivalent. 3) Visually verify that the 128Kbps carrier resides within 100KHz.		
CATDEP Para 3.2.1.g. Func Spec Para 3.2.1.3 Para 3.2.1.12 Para 3.2.1.13 INMARSAT SDM	Enhanced 128K Lease Service High performance Modem and related interface equipment required to support enhanced service.	128Kbps Performance Verify 128Kbps performance in the presence of adjacent channels providing 128Kbps With all three BERT's verified in synch with data connectivity established. 1) Record Test Stop time 2) Visually verify that the measured bit error rate is 10^{-6} or less as displayed on the BERT monitoring the center channel. 3) LESO verification of measured bit error rate (10^{-6} or less at shore site).	1) Test Stop Time. <hr/> 2) MES BERT <hr/> 3) Shore BERT	
CATDEP Para 3.2.2.a. Func Spec Para 3.2.1.3 Para 3.2.1.10 3.2.1.12 INMARSAT SDM	Enhanced 64K Lease Service High performance Modem and related interface equipment required to support enhanced service.	64Kbps Performance Verify 64Kbps performance in the presence of adjacent channels providing 128Kbps and 64Kbps enhanced services. With all three BERT's verified in synch with data connectivity established. 1) LESO validation that terminal transmit power and Shore transmit power are in specification. 2) Record 124-hour test start time.	1) LESO Verbal Validation <hr/> 2) Test Start Time. <hr/>	
CATDEP Para 3.2.2.b. Func Spec Para 3.2.1.3 Para 3.2.1.10 Para 3.2.1.12	Enhanced 64K Lease Service High performance Modem and related interface equipment required to support enhanced service.	64Kbps Performance Verify 64Kbps performance in the presence of adjacent channels providing 128Kbps and 64Kbps enhanced services.		

INMARSAT SDM		With all three BERT's verified in synch with data connectivity established. 1) Visually verify that 3 carriers are present in 200KHz of contiguous bandwidth. 2) Visually verify that the three signal peak amplitudes are approximately equivalent. 3) Visually verify that the 64Kbps carrier resides within 50KHz.		
CATDEP Para 3.2.2.c. Func Spec Para 3.2.1.3 Para 3.2.1.10 Para 3.2.1.12 INMARSAT SDM	Enhanced 64K Lease Service High performance Modem and related interface equipment required to support enhanced service.	64Kbps Performance Verify 64Kbps performance in the presence of adjacent channels providing 128Kbps and 64Kbps enhanced services. With all three BERT's verified in synch with data connectivity established. 1) Record Test Stop time 2) Visually verify that the measured bit error rate is 10^{-6} or less as displayed on the BERT monitoring the center channel. 3) LESO verification of measured bit error rate (10^{-6} or less at shore site).	1) Test Stop Time. <hr/> 2) MES BERT 3) Shore BERT	

Technical Review Table (Phase III)

Offeror : _____

System Tested: _____

PHASE III Antenna Hand-over Interoperability Required Saturn-Bm Terminal Functions				
Reference	Required Function	Demonstration Criteria	Rating: SAT or UNSTAT	Signature/Date
CATDEP Para 3.3.1.a.	Demonstration Configuration Provide basis for system performance testing	Equipment Configuration Verify that the test configuration, equipment and specified cable lengths are in accordance with requirements listed in Figure 2 and table 1.		
<i>Modem Interoperability with Antenna Hand-over Unit in Stand-Alone Configuration</i>				
CATDEP Para 3.3.1.b Func Spec Para 3.2.1.15	Auto Transmit Control Data path DTR handshaking signal controls call establishment and cessation	(Hot dial, Function-85) With the Saturn-Bm terminal configured for Hot Dial (Function-85) and the BERT connected to the High Performance Modem, the data control signal (DTR) state shall be changed by toggling the DTR Key on the BERT.1) Saturn-Bm terminals and antenna hand-over units are configured for Stand- alone mode 2) Transmit signal should be displayed on the spectrum analyzer. 3) 128Kbps Data flow should be observed on the BERT		
CATDEP Para 3.3.1.b. Func Spec Para 3.2.1.11	Emission Control (EMCON) Provides a means to have positive control of all transmit signal outputs. External EMCON control required for MUTE capable ships.	MCU EMCON Key Switch With the spectrum analyzer configured to monitor the transmit signal, the EMCON Key is turned to enable EMCON. 1) The transmit signal should no longer be displayed. 2) The handset should provide a visual indication that transmit is disabled.		
CATDEP Para 3.3.1.b	Terminal Alarms Provides alarm or	Handset Display With the Saturn-Bm		

Func Spec Para 3.2.1.7	important message notification via flashing triangle symbol on the handset	terminal configured for a printer (function 77), and 128Kbps data connectivity established, the printer power switch shall be turned Off. 1) The terminal handset shall display a flashing triangle symbol. 2) 128kbps data flow shall be verified on the BERT		
CATDEP Para 3.3.1.b Func Spec Para 3.2.1.7	Active Alarms Provides listing of current active system alarms	Handset Display, Function 30 Continued from the Terminal alarms validation (printer power OFF and observed flashing triangle). 1) Function 30 shall display the printer alarm		
CATDEP Para 3.3.1.b Func Spec Para 3.2.1.7	Information Log Provides historical list of system alarms and faults that is used for monitoring the terminals operational status and troubleshooting.	Handset Display, Function 31 Continued from Active alarms. 1) Function 31 shall display a list of system alarms and faults.		
CATDEP Para 3.3.1.b Func Spec Para 3.2.1.7	Clear Cause Log Provides abnormal conditions that have caused the call to be cleared. Information is logged as it occurs. Used for monitoring terminal operation status and troubleshooting.	Handset Display, Function 32 Continued from Active alarms. 1) Function 32 shall provide a list indicating why previous calls were cleared. If no list is available the government representative shall verify access to function 32 on handset.		
CATDEP Para 3.3.1.b Func Spec Para 3.2.1.16	Signal Level Provides indication of the receive signal level. Must be viewable when the terminal is in idle mode and busy with a call. Used to verify antenna pointing and receive system readiness.	Shift+7, Function 27/28 With the High Performance Modem system active and 128 data connectivity established. 1) Pressing the Shift Key followed by the 7 key will display a signal level. 2) Function 27 and 28 shall also display Signal levels along with antenna position		
CATDEP Para 3.3.1.b	Current Ocean Region Provides indication of	Handset Display, Function 20		

<p>Func Spec Para 3.2.1.12 Para 3.2.1.16</p>	<p>current satellite selected and is used for changing to a different satellite</p>	<p>With the High Performance Modem system active and 128 data connectivity established. 1) Function 20 shall display current satellite.</p>		
<p>CATDEP Para 3.3.1.b Func Spec Para 3.2.1.4 Para 3.2.1.5 Para 3.2.1.6</p>	<p>Search for Satellite Provides capability to search for a satellite when the exact pointing angles are unknown</p>	<p>Handset Display, Function 26 With the High Performance Modem system active and no data call established. 1) Function 26 shall display the search for satellite prompt.</p>		
<p>CATDEP Para 3.3.1.b Func Spec Para 3.2.1.4 Para 3.2.1.5 Para 3.2.1.6</p>	<p>Antenna Absolute Position Provides capability to view and position the antenna to desired pointing angles, plus provides the current S/N levels.</p>	<p>Handset Display, Function 27 With the High Performance Modem system active and 128 data connectivity established. 1) Function 27 shall display antenna position and signal level.</p>		
<p>CATDEP Para 3.3.1.b Func Spec Para 3.2.1.16</p>	<p>Read/Set Compass Indicates the current gyro input heading and provides the capability to correct. This is required for periodic updates to the heading</p>	<p>Handset Display, Function 29 With the High Performance Modem system active and 128 data connectivity established. 1) Function 29 shall display current heading position.</p>		
<p>CATDEP Para 3.3.1.b Func Spec Para 3.2.1.16</p>	<p>Display and Key Light Controls illumination of the display and keys for view under all ambient light conditions</p>	<p>Handset Display, Shift+9 With the High Performance Modem system active and 128 data connectivity established. 1) Pressing SHIFT key followed by the 9 Key should activate the display light.</p>		
<p>CATDEP Para 3.3.1.c Func Spec Para 3.2.1.16</p>	<p>Configure Ports Provides a means to toggle the Saturn-Bm terminal DTE port between data modes to prevent auto dialing when not authorized. Also used when troubleshooting the system</p>	<p>Handset Display, Function 70 With the High Performance Modem system active and no data call established. 1) Function 70 shall display current data port configuration.</p>		

<p>CATDEP Para 3.3.1.c</p> <p>Func Spec Para 3.2.1.4 Para 3.2.1.5 Para 3.2.1.6 Para 3.2.1.16</p>	<p>Relative Antenna Position Provides the capability to manually steer the antenna, plus provides the current S/N levels</p>	<p>Handset Display, Function 28 With the High Performance Modem system active and no data call established. 1) Function 28 shall display antenna position and signal level. 2) Current antenna azimuth shall be edited to a new value of existing azimuth plus 20° 3) Antenna change in position shall be confirmed by loss of signal.</p>		
<i>Modem Interoperability with Antenna Hand-over Unit Active</i>				
<p>CATDEP Para 3.3.1.d.</p> <p>Func Spec Para 3.2.1.14 Para 3.2.1.15</p>	<p>Auto Transmit Control Data path DTR handshaking signal controls call establishment and cessation</p>	<p>(Hot dial, Function 85) With the Saturn-Bm terminal configured for Hot Dial (Fuction-85) and the BERT connected to the High Performance Modem, the data control signal (DTR) state shall be changed by toggling the DTR Key on the BERT. 1) Saturn-Bm terminals and antenna hand-over units are configured for antenna hand-over mode 2) Transmit signal should be displayed on the spectrum analyzer. 3) 128Kbps Data flow should be observed on the BERT</p>		
<p>CATDEP Para 3.3.1.d.</p> <p>Func Spec Para 3.2.1.11 Para 3.2.1.14</p>	<p>Emission Control (EMCON) Provides a means to have positive control of all transmit signal outputs. External EMCON control required for MUTE capable ships.</p>	<p>MCU EMCON Key Switch With the spectrum analyzer configured to monitor the transmit signal, the EMCON Key is turned to enable EMCON. 1) The transmit signal should no longer be displayed. 2) The handset should provide a visual indication that transmit is disabled.</p>		
<p>CATDEP Para 3.3.1.d</p>	<p>Terminal Alarms Provides alarm or important message</p>	<p>Handset Display With the Saturn-Bm terminal configured for a</p>		

Func Spec Para 3.2.1.7 Para 3.2.1.14	notification via flashing triangle symbol on the handset	printer (function 77) and 128Kbps data connectivity established, the printer power switch shall be turned Off. 1) The terminal handset shall display a flashing triangle symbol. 2) 128kbps data flow shall be verified on the BERT		
CATDEP Para 3.3.1.d Func Spec Para 3.2.1.7 Para 3.2.1.14	Active Alarms Provides listing of current active system alarms	Handset Display, Function 30 Continued from the Terminal alarms validation (printer power OFF and observed flashing triangle). 1) Function 30 shall display the printer alarm		
CATDEP Para 3.3.1.d Func Spec Para 3.2.1.7 Para 3.2.1.14	Information Log Provides historical list of system alarms and faults that is used for monitoring the terminals operational status and troubleshooting.	Handset Display, Function 31 Continued from Active alarms. 1) Function 31 shall display a list of system alarms and faults.		
CATDEP Para 3.3.1.d Func Spec Para 3.2.1.7 Para 3.2.1.14	Clear Cause Log Provides abnormal conditions that have caused the call to be cleared. Information is logged as it occurs. Used for monitoring terminal operation status and troubleshooting.	Handset Display, Function 32 Continued from Active alarms. 1) Function 32 shall provide a list indicating why previous calls were cleared. If no list is available the government representative shall verify access to function 32 on handset.		
CATDEP Para 3.3.1.d Func Spec Para 3.2.1.14 Para 3.2.1.16	Signal Level Provides indication of the receive signal level. Must be viewable when the terminal is in idle mode and busy with a call. Used to verify antenna pointing and receive system readiness.	Shift+7, Function 27/28 With the High Performance Modem system active and 128 data connectivity established. 1) Pressing the Shift Key followed by the 7 key will display a signal level. 2) Function 27 and 28 shall also display Signal levels along with antenna position		
CATDEP Para 3.3.1.d Func Spec	Current Ocean Region Provides indication of current satellite selected and is used for	Handset Display, Function 20 With the High Performance Modem		

Para 3.2.1.12 Para 3.2.1.14 Para 3.2.1.16	changing to a different satellite	system active and 128 data connectivity established. 1) Function 20 shall display current satellite.		
CATDEP Para 3.3.1.d Func Spec Para 3.2.1.4 Para 3.2.1.5 Para 3.2.1.6 Para 3.2.1.14	Search for Satellite Provides capability to search for a satellite when the exact pointing angles are unknown	Handset Display, Function 26 With the High Performance Modem system active and no data call established. 1) Function 26 shall display the search for satellite prompt.		
CATDEP Para 3.3.1.d Func Spec Para 3.2.1.4 Para 3.2.1.5 Para 3.2.1.6 Para 3.2.1.14	Antenna Absolute Position Provides capability to view and position the antenna to desired pointing angles, plus provides the current S/N levels.	Handset Display, Function 27 With the High Performance Modem system active and 128 data connectivity established. 1) Function 27 shall display antenna position and signal level.		
CATDEP Para 3.3.1.d Func Spec Para 3.2.1.14 Para 3.2.1.16	Read/Set Compass Indicates the current gyro input heading and provides the capability to correct. This is required for periodic updates to the heading	Handset Display, Function 29 With the High Performance Modem system active and 128 data connectivity established. 1) Function 29 shall display current heading position.		
CATDEP Para 3.3.1.d Tech Spec Para 3.2.1.14 Para 3.2.1.16	Display and Key Light Controls illumination of the display and keys for view under all ambient light conditions	Handset Display, Shift+9 With the High Performance Modem system active and 128 data connectivity established. 1) Pressing SHIFT key followed by the 9 Key should activate the display light.		
CATDEP Para 3.3.1.e Func Spec Para 3.2.1.14 Para 3.2.1.16	Configure Ports Provides a means to toggle the Saturn-Bm terminal DTE port between data modes to prevent auto dialing when not authorized. Also used when troubleshooting the system	Handset Display, Function 70 With the High Performance Modem system active and no data call established. 1) Function 70 shall display current data port configuration.		
CATDEP	Relative Antenna	Handset Display,		

<p>Para 3.3.1.e Tech Spec Para 3.2.1.4 Para 3.2.1.5 Para 3.2.1.6 Para 3.2.1.14 Para 3.2.1.16</p>	<p>Position Provides the capability to manually steer the antenna, plus provides the current S/N levels</p>	<p>Function 28 With the High Performance Modem system active and no data call established. 1) Function 28 shall display antenna position and signal level. 2) Current antenna azimuth shall be edited to a new value of existing azimuth plus 20° 3) Antenna change in position shall be confirmed by loss of signal.</p>		
<i>Modem Interoperability During Antenna Hand-over Evolution</i>				
<p>CATDEP Para 3.3.1.f.</p>	<p>Demonstration Configuration Provide basis for system performance testing</p>	<p>Equipment Configuration Verify that the test configuration, equipment and specified cable lengths are in accordance with requirements listed in Figure 2, Figure 3 and table 1.</p>		
<p>CATDEP Para 3.3.1.g. Func Spec Para 3.2.1.14 Para 6.3</p>	<p>Antenna Handover Provides a means of automatic switching between antennas to maintain a continuous line of sight to the satellite</p>	<p>128Kbps Interoperability With spectrum analyzers set to monitor each system during the antenna hand-over evolution and 128kbps data connectivity established. 1) verify the transfer from the primary antenna (A) to the secondary antenna (B) by observing the transmit carrier transfer. 2) Verify that the BERT has recovered and is in synch and receiving and transmitting data.</p>		

Response to Questions to RFP N66001-02-R-5999 Supplement to Amendment 0007

Reference: Amendment 4 - Q&A #1; Amendment 2 - Q&A #10; Amendment 1 - Q&A #50. Attachment 3 - INMARSAT Authorization; SOW 3.3; Func Spec 6.1; Func Spec 3.2.10; Func Spec 3.2.1.13. Amendment 2 - Q&A #10 directed that a lease authorization for 128kbps in 100kHz and for 2x64kbps in 100kHz be submitted to INMARSAT through Stratos. No response from INMARSAT through Stratos has been returned for a lease application prepared with a design demonstrating adjacent carrier interference performance in 100kHz equivalent to the theoretical performance in 120kHz as recommended in the report provided by INMARSAT's consultant, and an alternative lease authorization based on contiguous allocations greater than 100kHz has been suggested.

Q1 Does SPAWAR intend to modify the RFP (function spec 3.2.1.10, function spec 3.2.1.13 and other sections) to allow for bidders to be compliant while following the alternative guidelines suggested?

A. No. As previously stated in amendment 2, Government response to question 10, specific questions relating to each section of the application should be addressed to Stratos Mobile Networks and INMARSAT. As an INMARSAT LESO, Stratos may have additional insight into the approval process beyond the limited requirements of the RFP; therefore, vendors are encouraged to speak directly with Stratos. This does not change the Government's minimum requirements.

Q2. Does SPAWAR require that the lease authorization be based on a design that permits 128kbps and 2x64kbps in a single 100kHz allocation (as dictated by Attachment 3, RFP references to Func Spec 3.2.1.10 and 3.2.1.13)?

A. The RFP requires a INMARSAT non-standard lease authorization for 128kbps in 100kHz and 64kbps in 50kHz. In the latter case, two 64kbps carries are operated in 100kHz of contiguous bandwidth. It should also be noted that U.S Navy currently operates HSD service in blocks of contiguous 100kHz satellite channels.

Q3. Does SPAWAR require that a lease authorization based on a design that support 128kbps and 2x64kbps in a single 100kHz allocation be approved by INMARSAT for bidders to meet the technical requirements of the RFP?

A. Please refer to the Government response to question 2.

Reference: Amendment 4 - Q&A #3 and #4; Attachment 3 - Pre-Planned Product Improvement; SOW 3.10.4; CLINs 0043, 0066, 0089, 0112

Q4. Please confirm that offerors are only required to state with the response to this procurement that the "equipment can support non-channelized service by modifying systems existing firmware and/or software", and that only the successful bidder (contractor) is required to submit proposals for specific modifications required to support non-channelized service.

A. As stated in the Pre-planned product Improvement block of the Technical Evaluation of the Written Proposal, attachment 3 to the RFP, prospective offerors are required to submit a technical report (10-page limit) indicating that the proposed equipment has the capability of supporting a non-channelized service by modifying the systems existing firmware and or software.

Q5. In other words, is a proposal for specific pre-planned product improvements required with the response to this procurement?

A. Please refer to the Government response to question 4.

Q6. Q&A #4 response: "The proposed equipment modification shall be based on the prospective offerors pre-planned product improvement-engineeringproposal"

Is this engineering proposal required with the response to this procurement, or is the engineering proposal the deliverable for CLINs 0043, 0066, 0089 and 0112?

A. Please refer to the Government response to question 4.

Q7. This Q&A response states "equipment modification" where the requirements state that only firmware and/or software changes are permitted. Will SOW 3.10.4 be modified accordingly to permit equipment modifications as well as firmware and software changes?

A. The Government Response to Question 3 in amendment 4 amended Section 3.10.4 of the SOW added the following sentence: "The engineering proposal shall provide the basis for a preplanned product improvement equipment modification". Please note that equipment modifications are limited to firmware changes and or software changes.

Q8. Amendment 4 - Q&A 6; Func Spec 3.2.1.15 Function Spec 3.2.1.15 states conflicting requirements in that it requires that the "Hot dial" function of the Saturn B be used to establish connectivity. When operating in external modem mode, the Saturn B DCE port is configured for ASYNC data so that control messages may be exchanged between the MCU and external modem, and the "Hot Dial" function on the Saturn B is disabled. Can SPAWAR change Func Spec 3.2.1.5 text to read "...for simulating or emulating the Hot Dial function..." rather than ".....supporting the Hot Dial function...." to make this requirement more clear?

A. The government is requiring an automatic link establishment mode that is functionally the same as what is currently implemented for legacy 64kbps service on U.S. Navy Ships. The Data Terminal Ready (DTR) signal is used to automatically establish a data call via the Saturn-Bm terminal. Operating as an integrated part of the Saturn-Bm terminal the offerors proposed High Performance Modem and related interface equipment are required to support automatic link establishment functionality of the Saturn-Bm terminal as defined in Func Spec 3.2.1.15 Please note that the government defines the phrases of "automatic link establishment" and "Hot Dial" as interchangeable.

Paragraph 3.2.1.15 of the Function Specification in attachment 1 has been amended. The first sentence has been modified to read as follows: "Operating in conjunction with the Saturn-Bm terminal, the integrated High Performance Modem and related interface equipment shall provide the capability for supporting automatic link establishment (i.e. Hot Dial) functionality of the Saturn-Bm terminal"

The Auto Transmit Control Demonstration Criteria Blocks on page 11 (Phase I table) and pages 18 and 19 (Phase III tables) in amendment 4 have been amended. The number 85 has been removed.

Q9. We believe that the USN has rights to the Nera Saturn B terminal v7.12 software and associated keys and opening codes and should therefore be providing them as GFE under the subject solicitation.

A. We disagree. The above will not be provided under this solicitation as GFE.

Q10. SPAWAR has directed that bidders submit Inmarsat Lease Applications to Stratos for submittal to Inmarsat for supporting 128kbps and 2x64kbps in a single 100kHz allocation. We therefore submitted a lease application compliant with this requirement more than 2 months ago. To date, we have not received a formal response from Inmarsat through Stratos for this application and we request an extension so that we may prepare our response after receiving a formal response from Inmarsat through Stratos.

A. The Application is sufficient for proposal submission. See Amendment 0007, page 2 for details.

Q11. Recently Stratos has suggested an alternative Lease Application based on SPAWAR Q&A responses provided in Amendment 0002. Since Q&A responses in amendment 0002 do not change the requirements in the RFP (1x128kbps or 2x64kbps in a single 100kHz allocation) SPAWAR must clarify which

requirements have precedence in the pending procurement, the original SPAWAR RFP requirements or the more recent Stratos suggested requirements with an appropriate amendment to the solicitation (a requirements change rather than a Q&A response for informational purposes only).

A. The requirements as stated in solicitation N66001-02-R-5999 for non-standard lease services take precedence over any and all other communications or information. Furthermore, it is the vendor's sole responsibility to obtain all required authorizations from INMARSAT.