126 March 7, 2000

Mainthia Technologies Inc.
17535 Rosbough Drive, Suite 200
Corporate Cetner of Middleburg Hts.
Cleveland, OH 44130

Subject: Revised Letter Request for Offer 1-135-SCB.1009 for Safety, Quality and Reliability Support Services

Ref: NASA Letter Dated February 29, 2000

Since release of referenced letter there has been some changes in the anticipated workload for Statement of Work Section 2.1, Mission Assurance Services. Therefore, instruction given under item 2., Cost Proposal, e., (4) Labor, Paragraph three, is restated as follows:

"For estimating purposes of SOW Section 2.1, Mission Assurance Services, assume 5,700 direct labor hours will be required annually for Years 1 through 4 apportioned by labor skill categories as follows. Reconcile any differences between these categories and those in your established accounting system. Any composite hourly rates must be explained.

Reliability Engineer	22%
Senior System Safety Engineer	34%
Senior Risk Specialist	22%
Software Quality Assurance Specialist	22%"

In addition to the above, an error was found in the instructions for proposing indirect costs. Therefore, instruction given under item 2., Cost Proposal, e., (5) Indirects, Paragraph two, is restated as follows:

"The nature of the contract awarded as a result of this RFP is such that the issued work total could range from $400,000 to $3,000,000 over the life of the contract, spread equally over the four-year contract life. Discuss the effects of this on your indirect rates."

If you have any questions pertaining to proposal instructions, please call me at 757-864-2538 or t.m.spruill@larc.nasa.gov.

ORIGINAL SIGNED BY

Tracy M. Spruill
Contracting Officer

cc:

126/TSpruill
126/PClark
127/JCovington
421/JCaraballo

126 February 29, 2000

Mainthia Technologies Inc.
17535 Rosbough Drive, Suite 200
Corporate Cetner of Middleburg Hts.
Cleveland, OH 44130

Subject: Letter Request for Offer 1-135-SCB.1009 for Safety, Quality and Reliability Support Services

You are requested to submit a proposal in response to this request for proposal (RFP) in accordance with the instructions contained herein. Your proposal shall be submitted by March 20, 2000, 4:00 PM EST to the address shown at the end of this letter.

This request is not to be construed in any way as a commitment of Government funds; any award as a result of this request is contingent upon approval of the authority to negotiate and the availability of Government funds. In addition, the DCAA Northern Ohio Branch Office has informed the NASA Price Analyst that you do not have an approved accounting system to collect costs on a cost-reimbursement contract. Although this system problem does not preclude award, you should be aware that no payment can be made under this contract until this problem is resolved.

This procurement is being conducted through a Memorandum of Agreement between the Small Business Administration and NASA. Therefore, if your offer is accepted for award, the resulting contract will be placed directly with you. The SBA will not be required to sign or approve the contract, but this office will provide an executed copy to them.

Proposal Preparation and Submission – Special Instructions

This procurement is for a cost reimbursement, indefinite-delivery-indefinite-quality (IDIQ) contract where work will be issued on a Task Order basis. It is noted that the Statement of Work (SOW) generally describes the technical mission. Attached are three task orders which are as follows: Task 1 - Fire Protection Engineering Services, Task 2 - Safety and Facility Assurance Services and Task 3 - Receipt Inspections and Quality Assurance (RIQA) Laboratory Services. These task orders will be used in establishing your estimated cost for their prospective areas of the SOW (i.e. Sections 2.2, 2.3 and 2.4).

It is anticipated that these task orders will be issued to you before contract award for performance to begin on the effective date of the contract. Information is provided below to assist you in estimating costs associated with the SOW.

1. Proposal – You shall submit an original and six copies of your cost and technical proposals. In addition, the attached model contract must be submitted in triplicate with original signatures. You are to fill-in all blanks in the model contract, with particular attention to Schedule A.

Your proposal shall include a cost proposal, a technical proposal, a completed model contract and executed Representations and Certifications. Your proposal should be specific and complete. Your proposal should include the detailed information outlined below in order that a complete and timely evaluation of your proposal can be performed. Your proposal should be submitted in accordance with the following:

(a) All text shall be printed black on whit paper. Paper size for the text shall not exceed 8-1/2 by 11 inches; charts, graphs, tables, diagrams, photographs, and figures may be larger, if necessary.
(b) Type shall be no smaller than 12 points with 4 points of leading between lines.
(c) All pages of your proposal shall be numbered.

2. Cost Proposal

Under requirements of the Federal Acquisition Regulation (FAR), the Contracting Officer is responsible for determining reasonableness of prices. To establish cost realism, price reasonableness, and the extent to which prices reflect performance addressed in your Technical Proposal, you are required to submit cost or pricing data with your proposal pursuant to FAR 15.403-3 and 52.215-20. You shall certify your proposed cost or pricing data on the attached certificate (NASA Langley Form PROC/P-281), to be properly executed after negotiation and prior to contract award.

a. You shall include in your cost proposal sufficient detail to support and explain all costs proposed, giving figures and narrative explanation pursuant to instructions in Table 15-2 of FAR 15.408.

b. The cost proposal should be prepared in a manner consistent with your current accounting system and Cost Accounting Standards Disclosure Statement, if applicable. A complete and timely evaluation of your proposal cannot be performed without this information being submitted with your proposal.

c. Each subcontract expected to exceed a total of $500,000 shall also be supported in a similar manner consistent with Paragraphs a. and b. above. Prospective subcontractors may submit proprietary cost data directly to the Government no later than the date and time specified in the instructions for receipt of proposal for this RFP.

d. Computerized Cost Proposal Input Instructions

(1) The Government intends to use personal computers with Windows EXCEL 97 and LOTUS 1-2-3, Release 7, software to aid in the evaluation of the cost proposal. Offerors and subcontractors providing direct labor should submit cost information electronically or on 3-1/2 inch diskettes or CD's, two copies, in a format that can be opened with the specified software.

(2) It is preferred that all data/information be provided under one file; however, if the information you are submitting required more than one file, save all files under one directory. All linking must be within that directory. There shall be no external links. Your cost files/directory name must begin with at least the first four letters of your company's name or normal abbreviation, for example, Always Be Careful, Inc. cost file would be Always.wk4 or ABCI.xlw.

ALL ELECTRONIC COST SUBMISSIONS SHALL BE TRUE SELF-CALCULATING SPREADSHEETS. Any "absolute values" must be explained and supported.

e. Other Price and Cost Detail Instructions

(1) All cost and pricing data should be submitted in a format consistent with the contract's four-year period of performance and should be submitted separately and in detail for each of the four Statement of Work (SOW) task areas (i.e. Mission Assurance Services, Sire Engineering Services, Safety/Facility Services, and RIQA Laboratory Services) and in total. Program Management and Administration for the total contract shall be apportioned among the four task areas based on the cost of each task area. Provide the rationale for your proposed handling of these costs. The prime Contractor and any direct labor subcontractor(s) shall submit cost and pricing information to support their proposal(s).

(2) Assume a contract start date of April 13, 2000. The Government will provide a location on-site for the contractor to perform the required effort, in addition to those services listed in Paragraph 13 of the contract.

(3) You are reminded that the contractor is responsible for providing all facilities (e.g. personal computers, copier capabilities, fax machines, paper etc.), other than those the Government has identified as provided, necessary to perform the defined requirement. See Paragraphs 13 and 14 of the model contract.

(4) Labor - You must propose the labor hours necessary to provide the services set forth in Section C, Statement of Work. Your proposal must show the hours and costs by labor classification/category; however, the resultant contract will not reflect a specified level-of-effort. If any of the positions are classified by your accounting system as other than direct labor, or if you propose to subcontract any of the positions, so indicate. Any composite hourly rates must be explained. The Government intends to include the labor rates and indirect rates used to establish the proposed costs for each contract year in the resultant contract for pricing individual task orders (see Paragraph 4. below).

The "direct labor hours" discussed in these instructions are defined as those productive hours expended by Contractor and/or subcontractor personnel in performing direct functions required to perform the SOW as defined in the Model Contract and attached Task Orders. Identify any of the positions you propose to subcontract. It does not include administrative or other labor classified as indirect by your established accounting policy and procedures. The term does not include sick leave, vacation, holiday leave, military leave, or any type of administrative leave, but does include overtime hours and direct labor hours provided under subcontracts.

For estimating purposes of SOW Section 2.1, Mission Assurance Services, assume 3,800 direct labor hours will be required annually for Years 1 through 4 apportioned by labor skill categories as follows. Reconcile any differences between these categories and those in your established accounting system. Any composite hourly rates must be explained.

Reliability Engineer	33%
Senior System Safety Engineer	34%
Senior Risk Specialist	33%

For SOW Section 2.2, Fire Engineering, 2.3, Safety and Facility Assurance Services, and 2.4, RIQA Laboratory Services, proposed labor skill mix and hours should be based on the attached Task Orders. Assume the effort to be consistent for all contract years.

(5) Indirects - For each indirect pool, identify the rates and bases used to determine the proposed costs. (If your indirect rates have not been recently reviewed by the responsible Defense Contract Audit Agency Office, provide for larger indirect pools, e.g., overhead, fringe benefits, and G&A, list the expense accounts and amounts in the pools. Detail any labor elements in the pools. Provide the most recent three-year history of all indirect rates. If your rates have been recently audited, provide the responsible DCAA Office and point of contact.) Address if this contract has been considered in determining your proposed indirect rates.

The nature of the contract awarded as a result of this RFP is such that the issued work total could range from $900,000 to $3,000,000 over the life of the contract, spread equally over the four-year contract life. Discuss the effects of this on your indirect rates.

(6) Material - For estimating purposes use $4,000 annually for consumable materials related to the RIQA Laboratory, i.e., diamond paste, penetrant, micrometers, and eponet. Provide support and rationale for any other material costs proposed.

(7) Travel - For estimating purposes use $4,000 annually for travel related to SOW Section 2.1 Mission Assurance Services. For all other SOW Sections, travel should be based on the attached Task Orders. Provide support and rationale for any other travel costs proposed.

(8) Other Direct Costs (Other than Government Specified) - Provide an itemized breakdown and detailed explanation of all ODC proposed in addition to those addressed in paragraphs (6) – (7) above and (11) below.

(9) City/County Business License Tax – Propose any applicable business license taxes and enter your estimates. Consult the City of Hampton regarding personnel you intend to work on-site at LaRC even if your facility will not be located in Hampton.

(10) Facilities Capital Cost of Money (FCCOM) – Clearly identify FCCOM if you choose to include it in your proposal (ref. FAR 52.215-16). If you do not propose FCCOM, Clause 52.215-17, Waiver of Facilities Capital Cost of Money, will be included in the contract. As required by NASA FAR Supplement 1815.404-470(d)(1), when FCCOM is included as an item of cost in the Contractor's proposal, a reduction in the profit/fee objective will be made in an amount equal to the amount of FCCOM allowed in accordance with FAR 31.205-10(a).

(11) Escalation – As your cost proposal is expected to reflect the total cost to the Government for you to provide the effort in the SOW of this solicitation, your proposal should include anticipated escalation unless escalation is prohibited by law, regulation, or a specific clause in this document. Escalation factors should be clearly stated and escalated amounts shown for each escalated item. Discuss the derivation and rationale for the proposed escalation. Discuss your rationale for not escalating any elements that would normally be escalated.

(12) Fixed Fee – Propose fee that will relate to the SOW and provide the rationale.

(13) Phase-In - Phase-In Costs, if proposed, should be fully detailed and supported.

Identify if any systems, i.e. accounting, estimating, purchasing, compensation, and budgeting, have been reviewed or are under review, showing the status, outstanding issues, approval date, and name of the reviewing office.

3. Rate Schedule Instructions – You shall complete Attachment A, entitled "Schedule of Rates" to the model contract. Attachment A is the schedule of direct labor rates and indirect rates that will be used to establish the price for Task Orders issued under the contract. The rates in the schedule must be consistent with those used to establish your proposed costs as fully explained and supported in that proposal. Any deviations must be explained. All direct labor categories should be identified that will be required to perform to the SOW, including management if applicable.

4. Technical Proposal – You shall submit a plan addressing your technical approach and any other information required to determine reasonableness of your proposal for each of the attached task orders. Any work functions which you expect to obtain through subcontracting and/or consulting agreements should be described and explained. Such features as the rationale for this arrangement, the qualifications of the subcontractor,

magnitude of effort, facilities/equipment and commitment of parties providing such goods and/or services should be addressed.

Your proposal should be submitted to the following address: NASA Langley Research Center, Attn: Tracy M. Spruill, Mail Stop 126, Hampton, VA 23681. Any questions you have relative to this procurement should be directed to Tracy M. Spruill at 757-864-2538 or t.m.spruill@larc.nasa.gov.

PHC

Panice H. Clark
Contracting Officer

Enclosures

Attachment 1 - Certification in Current Cost and Pricing Data Form Proc/P-281
Attachment 2 - Representations and Certifications
Attachment 3 - Task Orders 1-3
Attachment 4 - Model Contract NAS1-00077

cc: (Letter Only)

126/PClark
126/TSpruill
127/JCovington
421/JCaraballo -- (send Full Package)
421/SShockcor -- (")
421/GWatson -- (")
209/DSmith -- (")

ATTACHMENT 1
CERTIFICATION IN CURRENT COST AND PRICING DATA FORM P-281

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

LANGLEY RESEARCH CENTER

HAMPTON, VIRGINIA 23681-2199

CERTIFICATE OF CURRENT COST OR PRICING DATA

This is to certify that, to the best of my knowledge and belief, the cost or pricing data (as defined in Section 15.401 of the Federal Acquisition Regulation (FAR) and required under FAR Subsection 15.403-4) submitted, either actually or by specific identification in writing, to the Contracting Officer or the Contracting Officer's representative in support of * are accurate, complete, and current as of **.

This certification includes the cost or pricing data supporting any advance agreements and forward pricing rate agreements between the offeror and the Government that are part of the proposal.

FIRM _____

SIGNATURE _____

NAME _____

TITLE _____

***

_____

Date of Execution

*Identify the proposal, quotation, request for price adjustment, or other submission involved, giving the appropriate identifying number (e.g., RFP No.).

**Insert the day, month, and year when price negotiations were concluded and the price agreement was reached or, if applicable, an earlier date agreed upon between the parties that is as close as practicable to the date of agreement on price.

***Insert the day, month, and year of signing, which should be as close as practicable to the date when the price negotiations were concluded and the contract price was agreed to.

ATTACHMENT 2
REPRESENTATIONS AND CERTIFICATIONS

REPRESENTATIONS, CERTIFICATIONS, AND
OTHER STATEMENTS OF OFFERORS OR QUOTERS

_____
COMPANY NAME

_____
AUTHORIZED COMPANY OFFICIAL NAME

_____
SIGNATURE

_____
DATE

1. TAXPAYER IDENTIFICATION (FAR 52.204-3) (OCT 1998)

(a) Definitions.

"Common parent," as used in this provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the offeror is a member.

"Taxpayer Identification Number (TIN)," as used in this provision, means the number required by the Internal Revenue Service (IRS) to be used by the offeror in reporting income tax and other returns. The TIN may be either a Social Security Number or an Employer Identification Number.

(b) All offerors must submit the information required in paragraphs (d) through (f) of this provision to comply with debt collection requirements of 31 U.S.C. 7701(c) and 3325(d), reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M, and implementing regulations issued by the IRS. If the resulting contract is subject to the payment reporting requirements described in Federal Acquisition Regulation (FAR) 4.904, the failure or refusal by the offeror to furnish the information may result in a 31 percent reduction of payments otherwise due under the contract.

(c) The TIN may be used by the Government to collect and report on any delinquent amounts arising out of the offeror's relationship with the Government (31 U.S.C. 7701(c)(3)). If the resulting contract is subject to the payment reporting requirements described in FAR 4.904, the TIN provided hereunder may be matched with IRS records to verify the accuracy of the offeror's TIN.

(d) Taxpayer Identification Number (TIN).

( ) TIN: _____.

( ) TIN has been applied for.

( ) TIN is not required because:

( ) Offeror is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the United States and does not have an office or place of business or a fiscal paying agent in the United States;

( ) Offeror is an agency or instrumentality of a foreign government;

( ) Offeror is an agency or instrumentality of the Federal Government.

(e) Type of organization.

( ) Sole proprietorship;

( ) Partnership;

( ) Corporate entity (not tax-exempt);

( ) Corporate entity (tax-exempt);

( ) Government entity (Federal, State, or local);

( ) Foreign government;

( ) International organization per 26 CFR 1.6049-4;

( ) Other _____.

(f) Common parent.

( ) Offeror is not owned or controlled by a common parent as defined in Paragraph (a) of this provision.

( ) Name and TIN of common parent:

Name _____

TIN _____

2. DATA UNIVERSAL NUMBERING SYSTEM (DUNS) NUMBER (FAR 52.204-6) (JUN 1999)

(a) The offeror shall enter, in the block with its name and address on the cover page of its offer, the annotation "DUNS" followed by the DUNS number that identifies the offeror's name and address exactly as stated in the offer. The DUNS number is a nine-digit number assigned by Dun and Bradstreet Information Services.

(b) If the offeror does not have a DUNS number, it should contact Dun and Bradstreet directly to obtain one. A DUNS number will be provided immediately by telephone at no charge to the offeror. For information on obtaining a DUNS number, the offeror, if located within the United States, should call Dun and Bradstreet at 1-800-333-0505. The offeror should be prepared to provide the following information:

(1) Company name.
(2) Company address.
(3) Company telephone number.
(4) Line of business.
(5) Chief executive officer/key manager.
(6) Date the company was started.
(7) Number of people employed by the company.
(8) Company affiliation.

(c) Offerors located outside the United States may obtain the location and phone number of the local Information Services office from the Internet home page at http://www.customerservice@dnb.com. If an offeror is unable to locate a local service center, it may send an e-mail to Dun and Bradstreet at globalinfo@mail.dnb.com.

3. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS (FAR 52.209-5) (MAR 1996)

(a)(1) The Offeror certifies, to the best of its knowledge and belief, that -

(i) The Offeror and/or any of its Principals -

(A) Are ( ) are not ( ) presently debarred, suspended, proposed for debarment, or declared ineligible for the award of contracts by any Federal agency;

(B) Have ( ) have not ( ), within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and

(C) Are ( ) are not ( ) presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in subdivision (a)(1)(i)(B) of this provision.

(ii) The Offeror has ( ) has not ( ), within a three-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(2) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

THIS CERTIFICATION CONCERNS A MATTER WITHIN THE JURISDICTION OF AN AGENCY OF THE UNITED STATES AND THE MAKING OF A FALSE, FICTITIOUS, OR FRAUDULENT CERTIFICATION MAY RENDER THE MAKER SUBJECT TO PROSECUTION UNDER SECTION 1001, TITLE 18, UNITED STATES CODE.

(b) The Offeror shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Offeror learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(c) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Offeror's responsibility. Failure of the Offeror to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Offeror nonresponsible.

(d) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of an Offeror is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(e) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Offeror knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

4. SMALL BUSINESS PROGRAM REPRESENTATIONS (FAR 52.219-1) (MAY 1999)

(a)(1) The standard industrial classification (SIC) code for this acquisition is 8711 [insert SIC code].

(2) The small business size standard is $4,000,000 [insert size standard].

(3) The small business size standard for a concern which submits an offer in its own name, other than on a construction or service contract, but which proposes to furnish a product which it did not itself manufacture, is 500 employees.

(b) Representations. (1) The offeror represents as part of its offer that it ☐ is, ☐ is not a small business concern.

(2) [Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.] The offeror represents, for general statistical purposes, that it ☐ is, ☐ is not, a small disadvantaged business concern as defined in 13 CFR 124.1002.

(3) [Complete only if the offeror represented itself as a small business concern in paragraph (b)(1) of this provision.] The offeror represents as part of its offer that it ☐ is, ☐ is not a women-owned small business concern.

(c) Definitions.

"Small business concern," as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding on Government contracts, and qualified as a small business under the criteria in 13 CFR Part 121 and the size standard in paragraph (a) of this provision.

"Women-owned small business concern," as used in this provision, means a small business concern--

(1) Which is at least 51 percent owned by one or more women or, in the case of any publicly owned business, at least 51 percent of the stock of which is owned by one or more women; and

(2) Whose management and daily business operations are controlled by one or more women.

(d) Notice. (1) If this solicitation is for supplies and has been set aside, in whole or in part, for small business concerns, then the clause in this solicitation providing notice of the set-aside contains restrictions on the source of the end items to be furnished.

(2) Under 15 U.S.C. 645(d), any person who misrepresents a firm's status as a small, small disadvantaged, or women-owned small business concern in order to obtain a contract to be awarded under the preference programs established pursuant to section 8(a), 8(d), 9, or 15 of the Small Business Act or any other provision of Federal law that specifically references section 8(d) for a definition of program eligibility, shall–

(i) Be punished by imposition of fine, imprisonment, or both;

(ii) Be subject to administrative remedies, including suspension and debarment; and

(iii) Be ineligible for participation in programs conducted under the authority of the Act.

5. PREVIOUS CONTRACTS AND COMPLIANCE REPORTS (FAR 52.222-22) (FEB 1999)

The offeror represents that–

(a) It ☐ has, ☐ has not participated in a previous contract or subcontract subject the Equal Opportunity clause of this solicitation;

(b) It ☐ has, ☐ has not filed all required compliance reports; and

(c) Representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained before subcontract awards.

6. AFFIRMATIVE ACTION COMPLIANCE (FAR 52.222-25) (APR 1984)

The offeror represents that (a) it ( ) has developed and has on file, ( ) has not developed and does not have on file, at each establishment, affirmative action programs required by the rules and regulations of the Secretary of Labor (41 CFR 60-1 and 60-2), or (b) it ( ) has not previously had contracts subject to the written affirmative action programs requirement of the rules and regulations of the Secretary of Labor.

7. CERTIFICATION OF TOXIC CHEMICAL RELEASE REPORTING (FAR 52.223-13) (OCT 1996)

(a) Submission of this certification is a prerequisite for making or entering into this contract imposed by Executive Order 12969, August 8, 1995.

(b) By signing this offer, the offeror certifies that—

(1) As the owner or operator of facilities that will be used in the performance of this contract that are subject to the filing and reporting requirements described in sectin313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C. 11023) and section 6607 of the Pollution Prevention Act of 1990 (PPA) (42 U.S.C. 13106), the offeror will file and continue to file for such facilities for the life of the contract the Toxic Chemical Release Inventory Form (Form R) as described in sections 313(a) and (g) of EPCRA and section 6607 of PPA; or

(2) None of its owned or operated facilities to be used in the performance of this contract is subject to the Form R filing and reporting requirements because each such facility is exempt for at least one of the following reasons: (Check each block that is applicable.)

☐ (i) The facility does not manufacture, process, or otherwise use any toxic chemicals listed under section 313(c) of EPCRA, 42 U.S.C. 11023(c);

☐ (ii) The facility does not have 10 or more full-time employees as specified in section 313(b)(1)(A) of EPCRA, 42 U.S.C. 11023(b)(1)(A);

☐ (iii) The facility does not meet the reporting thresholds of toxic chemicals established under section 313(f) of EPCRA, 42 U.S.C. 11023(f) (including the alternate thresholds at 40 CFR 372.27, provided an appropriate certification form has been filed with EPA);

☐ (iv) The facility does not fall within Standard Industrial Classification Code (SIC) designations 20 through 39 as set forth in section 19.102 of the Federal Acquisition Regulation; or

☐ (v) The facility is not located within any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Northern Mariana Islands, or any other territory or possession over which the United States has jurisdiction.

8. BUY AMERICAN CERTIFICATE (FAR 52.225-1) (DEC 1989)

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

Excluded End Products	Country of Origin

(List as necessary)

Offerors may obtain from the Contracting Officer lists of articles, materials, and supplies excepted from the Buy American Act.

9. ROYALTY INFORMATION (FAR 52.227-6) (APR 1984)

(a) Cost or charges for royalties. When the response to this solicitation contains costs or charges for royalties totaling more than $250, the following information shall be included in the response relating to each separate item of royalty or license fee:

(1) Name and address of licensor.

(2) Date of license agreement.

(3) Patent numbers, patent application serial numbers, or other basis on which the royalty is payable.

(4) Brief description, including any part or model numbers of each contract item or component on which the royalty is payable.

(5) Percentage or dollar rate of royalty per unit.

(6) Unit price of contract item.

(7) Number of units.

(8) Total dollar amount of royalties.

(b) Copies of current licenses. In addition, if specifically requested by the Contracting Officer before execution of the contract, the offeror shall furnish a copy of the current license agreement and an identification of applicable claims of specific patents.

10. USE OF GOVERNMENT-OWNED PROPERTY (NASA 1852.245-79) (JUL 1997)

(a) The offeror ( ) does, ( ) does not intend to use in performance of any contract awarded as a result of this solicitation existing Government-owned facilities (real property or plant equipment), special test equipment, or special tooling (including any property offered by this solicitation). The offeror shall identify any offered property not intended to be used. If the offeror does intend to use any of the above items, the offeror must furnish the following information required by Federal Acquisition Regulation (FAR) 45.205(b), and NASA FAR Supplement (NFS) 1845.102-71:

(1) Identification and quantity of each item. Include the item's acquisition cost if it is not property offered by this solicitation.

(2) For property not offered by this solicitation, identification of the Government contract under which the property is accountable and written permission for its use from the cognizant Contracting Officer.

(3) Amount of rent calculated in accordance with FAR 45.403 and the clause at FAR 52.245-9, Use and Charges, unless the property has been offered on a rent-free basis by this solicitation.

(4) The dates during which the property will be available for use, and if it is to be used in more than one contract, the amounts of respective uses in sufficient detail to support proration of the rent. This information is not required for property offered by this solicitation.

(b) The offeror ( ) does, ( ) does not request additional Government provided property for use in performing any contract awarded as a result of this solicitation. If the offeror requests additional Government-provided property, the offeror must furnish --

(1) Identification of the property, quantity, and estimated acquisition cost of each item; and

(2) The offeror's written statement of its inability to obtain facilities as prescribed by FAR 45.302-1(a)(4).

(c) If the offeror intends to use any Government property (paragraph (a) or (b) of this provision), the offer must also furnish the following:

(1) The date of the last Government review of the offeror's property control and accounting system, actions taken to correct any deficiencies found, and the name and telephone number of the cognizant property administrator.

(2) A statement that the offeror has reviewed, understands, and can comply with all property management and accounting procedures in the solicitation, FAR Subpart 45.5, and NFS Subparts 1845.5 and 1845.71.

(3) A statement indicating whether or not the costs associated with paragraph (2) of this provision, including plant clearance and/or plant reconversion costs, are included in its cost proposal.

11. COMPLIANCE WITH VETERAN'S EMPLOYMENT REPORTING REQUIREMENTS (FEB 1999)

By submission of its offer, the offeror represents that, if it is subject to the reporting requirements of 37 U.S.C. 4212(d)(i.e., the VETS-100 report required by Federal Acquisition Regulation clause 52.222-37, Employment Reports on Disabled Veterans and Veterans of the Vietnam Era), it has submitted the most recent report required by 37 U.S.C. 4212(d).

12. CENTRAL CONTRACTOR REGISTRATION (LARC 52.204-101)(NOVEMBER 1999)

(a) *Definitions.* As used in this provision—

(1) "Central Contractor Registration (CCR) database" means the primary DoD repository for contractor information required for the conduct of business with NASA.

(2) "Data Universal Number System (DUNS) number" means the 9-digit number assigned by Dun and Bradstreet Information Services to identify unique business entities.

(3) "Data Universal Numbering System +4 (DUNS+4) number" means the DUNS number assigned by Dun and Bradstreet plus a 4-digit suffix that may be assigned by a parent (controlling) business concern. This 4-digit suffix may be assigned at the discretion of the parent business concern for such purposes as identifying sub-units or affiliates of the parent business concern.

(4) "Commercial Government and Entity Code (CAGE Code)" means –

(i) A code assigned by the Defense Logistics Information Service (DLIS) to identify a commercial or Government entity; or

(ii) A code assigned by a member of the North Atlantic Treaty Organization (NATO) that is recorded and maintained by DLIS in the CAGE master file.

(5) "Registered in the CCR database" means that all mandatory information, including the DUNS number or the DUNS+4 number, if applicable, and the corresponding CAGE code, is in the CCR database; the DUNS number and the CAGE code have been validated; and all edits have been successfully completed.

b) (1) The Offeror is requested to enter its CAGE Code below:

CAGE Code for contractor location: _____

(2) Offerors should not delay submission of the offer pending receipt of a CAGE or registration in the CCR.

(3) DoD has established a goal of registering an applicant in the CCR database within 48 hours after receipt of a complete and accurate application via the Internet. However, registration of an applicant submitting an application through a method other than the Internet may take up to 30 days. Therefore, offerors that are not registered should consider applying for registration immediately upon receipt of this solicitation.

(c) Offerors and contractors may obtain information on registration and annual confirmation requirements via the Internet at http://www.ccr2000.com or by calling 888-CCR-2423 (888-227-2423).

ATTACHMENT 3
TASK ORDERS 1 – 3

TASK1
FIRE PROTECTION

Date:

To: **Mainthia Technologies Inc.**
17535 Rosbough Drive, Suite 200
Corporate Center of Middleburg Hts.
Cleveland, OH 44130

Subject: **NAS1-00077 - Task 1: Fire Protection Engineering Surveys, Reviews and Evaluations**

Scope:

The Office of Safety and Facility Assurance, within the Office of Safety and Mission Assurance is responsible for ensuring that all LaRC facilities comply with the requirements of the National Fire Protection Association (NFPA), Safety Standard for Fire Protection STD 8719.11, Langley Research Center Procedures and Guidelines Fire Protection Manual LAPG 1710.11, Factory Mutual Data Sheets and other state and local codes. The Contractor's responsibility entails the review of existing facilities to assess the fire and life safety risks, analysis and review of special hazards within the facilities, special projects to address specific programmatic objectives, and tracking of fire protection program achievements. A Fire Protection Engineer (FPE) shall perform all tasks within this delivery order. The FPE will also keep the Fire Protection library of codes current, replacing outdated codes as required on a yearly basis.

Period of Performance: Contract Award through April 12, 2001

Subtask 1 - Fire Protection Engineering Surveys:

A fire protection engineering survey of the following facility is required. This will include adequacy of fire alarm and suppression systems, means of egress, specialized heating, ventilation, air conditioning requirements, and other specialized equipment that may be specified in the codes or standards identified above. The Contractor is responsible for coordinating with the Government Facility Coordinator the appropriate facilities drawings to be utilized for the survey.

1) Building 1212 - Wind Tunnel

A draft report shall be submitted to the LaRC Fire Chief for review within three weeks of completion of the site survey. A final report shall be submitted one week after the LaRC Fire Chief's review with all appropriate comments incorporated. The report shall delineate the non-compliance areas in Building 1212 and recommendations for bringing the facility into compliance. The report shall include but not be limited to the content and format established in the LaRC Fire Protection Manual. The survey shall include Risk Assessment Codes as described in LaRC Fire Protection Manual. The survey shall

have a brief description of the facility, an ID number for each finding as well as a recommended corrective action.

Performance Meets: Reports are submitted on required schedule. Reports are concise, well written and complete. The rationale presented for judgements and recommendations is solid and intelligent. Some errors exist but minimal impact on report.

Performance Fails: No report is submitted for the review of Building 1212 Wind Tunnel. Report has incorrect technical information.

Subtask 2 - Fire Protection Engineering Reviews/Consultations:

Technical fire protection engineering reviews and consultations are required of facility work orders, specifications for construction, drawing packages, and building modifications for all LaRC facilities, as well as review and comment of all fire protection equipment specifications and drawings. These items must be reviewed for compliance with applicable Factory Mutual Data Sheets, requirements of the NFPA, the requirements of NASA Safety Standard for Fire Protection STD 8719.11, and Langley Research Center Procedures and Guidelines Fire Protection Manual LAPG 1710.11. The FPE shall assist the LaRC Fire Chief and NASA LaRC project engineers identifying viable solutions to problems that may arise during the reviews or consultations in mentioned above.

A completion date will be established for each review when assigned to the FPE. A review comment record sheet shall be submitted at the completion of each review. This review sheet shall include but not be limited to when date review was received, and date it was completed. It shall include a review sheet number and a brief description of the review. Finally, the review shall have a comment section that will include the following when applicable: no comment, findings, discrepancies, concurrence, or summary of consultation.

A summary indicating the number of reviews submitted, type of review submitted, and the number completed shall be submitted within five working days after the end of each month.

Anticipated numbers of reviews/consultations for the task period are as follows:
1. 15 Work Orders
2. 30 Specifications
3. 20 Building Modifications
4. 20 Drawing Packages
5. 30 Fire Protection Equipment Specifications and Drawings

Performance Meets: Reports are submitted on required schedule. Reports are concise, well written and complete. The rationale presented for judgments and recommendations is solid and intelligent. Some errors exist but minimal impact on report.

Performance Fails: No report is submitted for the review. Report has incorrect technical information.

Subtask 3 - Fire Protection Annual Report

Develop and prepare the Fire Protection Annual Report FY00 satisfying the requirements of the Fire Protection Program Handbook LAPG 1710.11. Format shall follow reports performed in FY98 and FY99. The Contractor is responsible for coordinating with the Government Safety Office, Security Office, and Environmental Office to get the appropriate data to be utilized for the Annual Report. A draft report shall be submitted to the LaRC Fire Chief for review and comment by November 15, 2000. A final report shall be submitted with all appropriate comments incorporated one month after comments are received from the Government.

Performance: Contractor performance will be evaluated based on meeting requirements of LAPG 1710.11, adherence to report due date and quality of the report. Delivering complete items a month or more in advance and a report of notable high quality may exceed the metric.

Subtask 4 – Emergency Response Support:

1. The FPE shall be readily available, when the NASA LaRC Fire Chief is not able to respond, to respond immediately to the scene of an emergency. At the emergency scene, the FPE serves as the LaRC representative, providing necessary interface with the City of Hampton fire personnel to handle the emergency in an efficient manner. Other NASA emergency operations and security forces will also respond to provide assistance. The FPE shall coordinate with these and other mutual aid forces as required. The FPE shall obtain within 90 days of contract start date the following certifications, Firefighter I & II, and Incident Command certification through the Virginia Department of Fire Programs.

   Performance: The contractor will be evaluated based on response time, interchange with other parties and obtaining proper certifications on schedule. This metric may be exceeded by the professional technical exchange and decision-making process that is presented and acquiring certifications within 50 days of contract start.
   Performance Fails: If FPE does not respond when required, under the terms listed above.

2. The FPE shall submit a proposal for a large emergency response drill. (Large means that the drill would include NASA Fire, City of Hampton, NASA Security, and Johnson Controls Hazmat team). The PFE shall attend the emergency drill and shall observe the exercise and outcome of the drill. A report shall be submitted two weeks after completion of the drill summarizing the type of drill, the groups involved, and the objectives. In the report the FPE shall also address the outcome of

the drill and possible corrective actions to enable the participants to have a better outcome and improve performances.

Performance: The contractor will be evaluated based on the quality of work, reports and level of participation. In order to exceed this metric the reports must be of notable high quality and/or contain additional useful information or insights, provide useful insights on improving the drills, exceptional communicating and coordinating with Government counterparts and submission of the report at least four days before required submission.
Performance Fails: No report is submitted. Report has incorrect technical information.

General

Reporting Requirements:

Draft Reports
1. Upon completion of a report, the Contractor shall submit two (2) approval copies to the Task Order Monitor for review by NASA. These copies may be reproduced on both sides of sheet where feasible and assembled by an economical means by the Contractor.

2. The Contractor will be notified of acceptance of the draft copy of the report by the Task Monitor within ten (10) calendar days. Approval will be contingent upon changes required by NASA.

Final Reports
1. A Contractor final report shall consist of a single-sided, unbound, laser printed copy of the text with all tables, figures, artwork, graphs, photos and captions included on the pages. Photographs shall be either scanned electronic images or unscreend glossy prints that have been cut and mounted on the pages. The report shall be single spaced with consecutive page numbers on all pages. The manuscript shall be printed on 8-1/2 by 11 paper with a maximum page image are of 7-1/8 by 9-3/16 inches.

2. Contact the Langley COTR for information on transmitting the electronic files, if applicable. The electronic files may be saved on a 3.5-inch, high density, double-sided disk(s) and submitted with the final report. The disk(s) and files should be labeled to properly identify the report.

Government Furnished Items: None

Task Limitations:

Authorized Task Limitations:

Cost:

Fixed Fee:
Total CPFF:

Authorized Funding Limitations:

Cost:
Fixed Fee:
Total CPFF:

The above shall not be exceeded for this Task Order without prior written authorization of the Contracting Officer. Further, the Contractor is advised that the FAR Clause entitled, "Limitation of Funds" is in effect.

Task Monitor: Doug Smith

You are hereby requested to acknowledge receipt of this Task Order on the attached acknowledgement sheet and return one copy to the undersigned at NASA LaRC, Mail Stop 126, Hampton, VA 23681-0001.

XXXXXX
Contracting Officer

TASK 2
SAFETY/FACILITY ASSURANCE

Date:

To: **Mainthia Technologies Inc.**
17535 Rosbough Drive, Suite 200
Corporate Center of Middleburg Hts.
Cleveland, OH 44130

Sugject: **NAS1-00777 – Task 2: Safety and Facility Assurance Services**

The subtasks outlined in this Task Order (TO) will assist the Office of Safety and Facility Assurance (OSFA) ensure that high-risk research facilities at LaRC are designed, modified, and operated in a safe manner in accordance with LAPG 1740.4, "Facility System Safety and Configuration Management Handbook." These subtasks primarily support Construction of Facility (CoF) and research-funded facility modification projects occurring at LaRC. Work to be performed under the scope of this TO is specified in the following subtask Statements-of-Work (SOW).

This TO details the requirements to perform the twelve subtasks outlined in Table 1. Each of these projects is assigned a civil servant to manage and oversee facility assurance activities. In addition to the detailed requirements outlined for each subtask, the Contractor shall provide a monthly status to the subtask civil servant point-of-contact (POC). Facility assurance activities for these projects may include:

- The performance a hazards analysis to identify and document risks associated with the projects,
- The generation or modification of a Safety Analysis Report (SAR) to document hazards and abatements for risks identified during the hazards analysis phase,
- Reviewing and/or generating standard operating procedures and checklists to be used in the facility upon completion of construction activities,
- Reviewing wiring, piping and instrumentation drawings to ensure specified interlocks have been included both in the design and construction of the facility modifications, and
- Presenting the findings of these activities at various stages of the design review process to the design review panels.

To assist the contractor determine the effort required, each subtask has been assigned a characteristic size of either small, medium, large, or very large. Typically a small subtask requires 150-250 hours to complete. A medium subtask typically requires 300-400 hours to complete. Large subtasks typically require 500-600 hours. Very large subtasks require in excess of 600 hours to complete. This information is only provided to the contractor as a guide. The contractor shall not use this information as firm estimates provided by the Government but shall estimate the required effort as they deem appropriate. If the contractor feels the Government has either under or over estimated the size of the effort to complete a subtask, they shall estimate the cost of the subtask accordingly.

Table 1, Task Order Subtasks and Their Estimated Size

Subtask	Title	Estimated Size
1	New Facility Automation System for the 14x22 ft. Subsonic Wind Tunnel.	M
2	Transonic Dynamics Tunnel (TDT) Safety Analysis Report (SAR) Update.	L
3	Safety Analysis of Planned Upgrades to the Transonic Dynamics Tunnel (TDT).	L
4	31" Mach 10 Tunnel Facility Automation, FY-'00 CoF Project.	M
5	Cockpit Motion Facility.	L
6	Safety Analysis of Upgrades to 12-Ft Free Flight Tunnel Main Drive (644).	M
7	14 X 22 Subsonic Tunnel Main Drive Replacement	L
8	15" Mach 6 Tunnel Settling Chamber Replacement	M
9	Upgrade the Controls and Fuel Systems for the Arc-Heated Scram Jet Test Facility (AHSTF), Building 1247B, FY-'00 CoF Project	M
10	National Transonic Facility (NTF) Safety Analysis Report (SAR) Update.	S
11	15-Inch Mach 6 High Temperature Tunnel Safety Analysis Report (SAR) Update.	S
12	31-Inch Mach 10 Wind Tunnel Safety Analysis Report (SAR) Update.	S

Contract Performance:

The contractor's schedule, cost, technical and quality performance under this task order shall be assessed via a Performance Evaluation Form (PEF) at the subtask level. A maximum number of points have been assigned for each subtask. Each subtask factor has a defined criteria that ranges from 0 to 4 (2 being minimum acceptable and 4 exceeds minimum acceptable). An importance factor ranging from 1 to 4 showing the relative importance of the performance factor to one another has also been assigned (1 being less important than 4). The earned criteria are multiplied by the importance factor for each performance factor to establish the points awarded for each performance factor. The individual points awarded are then summed and divided by the total possible points for get a final subtask grade percentage. The total points awarded for each subtask are summed to establish a total awarded point for the task order. A final grade percentage is then calculated for the task order. The final grade is defined as follows:

0-24	Unsatisfactory
25-49	Below Average
50	Meets
51-74	Exceeds
75-100	Outstanding

Period of Performance: Contract Award through April 12, 2001

Task Limitations:

Authorized Task Limitations:

Cost:
Fixed Fee:
Total CPFF:

Authorized Funding Limitations:

Cost:
Fixed Fee:
Total CPFF:

The above shall not be exceeded for this Task Order without prior written authorization of the Contracting Officer. Further, the Contractor is advised that the FAR Clause entitled, "Limitation of Funds" is in effect.

Task Monitor: Jose Caraballo

You are hereby requested to acknowledge receipt of this Task Order on the attached acknowledgement sheet and return one copy to the undersigned at NASA LaRC, Mail Stop 126, Hampton, VA 23681-0001.

XXXXXX
Contracting Officer

Task 2 – Facility Safety Performance Evaluation: Total TO

Subtask	Title	Actual Points	
		Possible	Awarded
1	New Facility Automation System for the 14x22 ft. Subsonic Wind Tunnel.	82	
2	Transonic Dynamics Tunnel (TDT) Safety Analysis Report (SAR) Update.	58	
3	Safety Analysis of Planned Upgrades to the Transonic Dynamics Tunnel (TDT).	76	
4	31" Mach 10 Tunnel Facility Automation, FY-'00 CoF Project.	94	
5	Cockpit Motion Facility.	116	
6	Safety Analysis of Upgrades to 12-Ft Free Flight Tunnel Main Drive (644).	62	
7	14 X 22 Subsonic Tunnel Main Drive Replacement	82	
8	15" Mach 6 Tunnel Settling Chamber Replacement	94	
9	Upgrade the Controls and Fuel Systems for the Arc-Heated Scram Jet Test Facility (AHSTF), Building 1247B, FY-'00 CoF Project	82	
10	National Transonic Facility (NTF) Safety Analysis Report (SAR) Update.	44	
11	15-Inch Mach 6 High Temperature Tunnel Safety Analysis Report (SAR) Update.	58	
12	31-Inch Mach 10 Wind Tunnel Safety Analysis Report (SAR) Update.	58	
	Total:		

Final Grade = (Total Points Awarded/Total Possible Points) x 100 = _____%

Subtask 1: New Facility Automation System for the 14X22 Ft. Subsonic Wind Tunnel.

Task Description:

This subtask is to provide the necessary safety documentation and support associated with the installation of a new facility automation system for the 14 X 22 Ft. Subsonic Wind Tunnel (SWT), B1212C. The scope of the project is to provide automated capability for facility operation. It also includes upgrades to the facility high-pressure air system, upgrades to model carts #1 & #2, construction of model cart #7 & a mini cart, and a building addition to the model preparation area.

The contractor shall review a draft Hazards Analysis (HA) previously performed on the modifications to the 14x22 Ft. SWT. The HA will be provided to the contractor in the form of a draft Safety Analysis Report (SAR) and presentation charts. The review of the HA shall be consistent with the requirements of LAPG 1740.4, "Facility System Safety and Configuration Management Handbook" and will include:

- Identification of any new hazards and undesired events,
- Identification of existing undesired events affected by this Construction of Facility (CoF) project,
- Documentation of hazard abatements or recommendation of required hazard abatements for new and existing undesired event in order to have an acceptable Risk Assessment Code (RAC),
- Review of drawings and procedures, and
- Discussions with facility and engineering personnel to ensure the accuracy of the HA.

This CoF project is presently in the construction and integrated testing phase; thus, the contractor shall perform the tasks outlined below.

- The contractor shall review redlined drawings and procedures to ensure the correctness of the hazards analysis and inclusion of safety interlocks.
- The contractor shall review construction changes for impact on the hazards analysis. All changes reviewed shall be documented.
- The contractor shall perform follow-up activities to insure the drawings and documentation required for inclusion into the Configuration Management Program are being handled as required by LAPG 1740.4, "Facility System Safety and Configuration Management Handbook."
- The contractor shall develop a list of safety requirements for inclusion into the Standard Operating Procedures (SOPs) and review/redline the SOPs as required. The contractor shall participate in a walk-through or demonstration of the procedures to provide any required safety inputs.
- The contractor shall review the shakedown plans to ensure all safety features are being tested and that the shakedown is being performed safely.

The contractor shall develop presentations charts for the Operational Readiness Review (ORR) and present the findings at the appropriate design reviews. The ORR will be conducted in two phases. The first ORR shall cover all changes except those to the High Pressure Air system. The second ORR shall cover the changes to the High Pressure Air system. The ORR charts shall report on the status of any safety action items assigned at the ISR and the open issues presented at the ISR. The ORR charts shall also report any safety related anomalies that occurred during integrated systems checkout.

At the completion of each ORR, the SAR, and any schematics in the SAR, shall be updated to reflect the "as-built" conditions at the 14 X 22 Ft. SWT.

Deliverables/Milestones:

Deliverable/Milestone	Date Required
1. Conduct meeting with POC to discuss review of HA.	1 week after notice to proceed
2. List of safety procedure requirements to be worked into final SOPs (all but HP air).	10 days prior to 1st ORR (~ April 2000)
3. List of construction changes and a safety review of each (all but HP air).	10 days prior to 1st ORR (~ April 2000)
4. ORR Presentation Charts for 1st ORR.	10 days prior to ORR (~ April 2000)
5. SAR that incorporates all changes but those to the HP air system	15 days after 1st ORR (~ May 2000)
6. List of safety procedure requirements to be worked into final SOPs (HP air).	20 days prior to 2nd ORR (~ July 2000)
7. List of construction changes and a safety review of each (HP air)..	20 days prior to 2nd ORR (~ July 2000)
8. ORR Presentation Charts for 2nd ORR.	10 days prior to ORR (~ July 2000)
9. Final SAR	15 days after 2nd ORR (~ September 2000)
10. Subtask closure report that shall include: • A review of the subtask and items completed; • A summary of findings & recommendations, and • A final version of items 2-9.	October 26, 2000

Special Deliverable requirements:

1. Items 1 through 8 shall be submitted as hardcopies only.
2. The task closure report (i.e., item 10) and all deliverables associated with the closure report shall have a software file submitted along with a hardcopy. The software file of any presentation shall be PowerPoint for Windows. The other files shall be Microsoft Word for Windows.
3. The final SAR shall be submitted in Microsoft Word for Windows and Acrobat "PDF." The PDF files shall be of a form that allows assembly of a complete SAR by appending a

file to a PDF file of a SARs title page and revision page(s). Note, the contractor is not responsible for the PDF file of a SARs title page and revision page(s).

Metrics:

See performance evaluation form.

Government Furnished Items:

A draft HA of the new facility automation system for the 14 X 22 Ft. Subsonic Wind Tunnel (B1212C) Project will be provided to the contractor in the form of a SAR and draft presentation charts. The SAR will be provided as a hardcopy along with a Microsoft Word file. The CDR charts will be provided as a hardcopy along with a PowerPoint for Windows file.

Other Information Needed for The Performance of Work:

There is no travel or Other Direct Charges (ODCs) associated with the performance of this subtask.

OSFA Point-of-Contact (POC): David Barker

Performance Evaluation Form

TA: 2 (Facility) Subtask: 1		Imp. Fact.	Criteria					Points Awarded
			0	1	2	3	4	---
Schedule / Cost	Interim Schedule Dates	1	Failure to submit a deliverable	No submittal more than 15 days late.	No submittal more than 10 days late.	No submittal more than 5 days late.	No submittal more than 2 days late.	
	Subtask Closure Report	1	Greater than 30 days late	Greater than 10 days late	10 days late - 5 days early	Greater than 5 days early	Greater than 10 days early	
	Charts for 1st ORR	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	Charts for 2nd ORR	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	Cost	1	Cost Variance greater than ± 15%	Cost Variance between ± 10% and ± 15%	Cost Variance between ± 5% and ± 10%	Cost Variance between ± 2% and ± 5%	Cost Variance less than ± 2%	
Technical	Hazards Identified	4	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments	3	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Overall evaluation	4	below average	average	above average	excellent	superior	
Quality	Quality of 1st ORR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of 2nd ORR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of Final SAR	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Overall evaluation	2	below average	average	above average	excellent	superior	
							Total Points Awarded:	
							Total Possible Points:	82
							Grade Percentage:	

0 – Far Below Minimum Acceptable
1 – Below Minimum Acceptable
2 – Minimum Acceptable
3 – Exceeds Minimum Acceptable
4 – Far Exceeds Minimum Acceptable

Subtask 2: Transonic Dynamics Tunnel (TDT) Safety Analysis Report (SAR) Update.

Task Description:

The contractor shall revise the existing Safety Analysis Report (SAR) for the Transonic Dynamics Tunnel (TDT) to include any changes to the design and operation of the system since the previous SAR was published. This task is not in support of an ongoing Construction of Facility (CoF) project. Its primary objective is to perform a hazard analysis of facility changes that have occurred since the last time the SAR was updated. To accomplish this, the contractor shall perform the necessary analysis to identify new hazards or update existing hazards and the associated risks.

The reporting of the hazard analyses shall be consistent with the requirements of LAPG 1740.4, "Facility System Safety and Configuration Management Handbook" and will include:

- Identification of any new or changed hazards and undesired events associated with the design and operation of the TDT,
- Documentation of hazard abatements or recommendation of required hazard abatements for each undesired event in order to have an acceptable Risk Assessment Classification, and
- Review drawings and procedures and conduct discussions with facility personnel to ensure the correctness of the TDT SAR.

There presently exists two versions of the TDT SAR, an approved version and a "redlined" version. The redlined version reflects some of the major changes that have occurred at TDT. The contractor shall use the approved version as a "baseline" and review and incorporate the appropriate changes reflected in the redlined version. In addition, the contractor shall identify, analyze, and document in the SAR other changes that have occurred at the TDT. Updating the SAR shall include electronic revision of schematics in the SAR.

This task does not include a safety analysis of the TDT's new Oscillating Turntable (OTT). This analysis has been conducted by the Government and will be provided to the contractor to incorporate into the SAR.

Deliverables/Milestones:

Deliverable/Milestone	Date Required
1. List of changes that have occurred since previous SAR was published.	Two weeks after notice to proceed
2. List of new/existing undesired events associated with each change.	Three weeks after notice to proceed
3. Documented hazard analysis that shall include: • Documentation of the hazard analysis performed in accordance with LAPG 1740.4, • List of existing/recommended procedural safety requirements resulting from changes, and • List of existing/recommended safety interlocks resulting from changes.	August 1, 2000
4. Draft SAR that incorporates the hazard analysis of all changes and required changes to any schematics in the SAR.	August 15, 2000
5. Subtask closure report that shall include: • A review of the subtask and items completed; • summary of findings & recommendations; and • Final SAR, list of existing/recommended procedural safety requirements and list of existing/recommended safety interlocks.	September 29, 2000

Special Deliverable requirements:

1. Items 1 through 4 shall be submitted as hardcopies only.
2. Item 5, and its subelements, shall have a software file submitted along with a hardcopy. The software files shall be Microsoft Word for Windows on a 3.5" disk.
3. The final SAR shall also be submitted in Acrobat "PDF." This PDF file shall be of a form that allows assembly of a complete SAR by appending it to a PDF file of a SARs title page and revision page(s). Note, the contractor is not responsible for the PDF file of a SARs title page and revision page(s).

Metrics:

See performance evaluation form.

Government Furnished Items:

Microsoft Word version of:

- Current approved SAR,
- Current "redlined" SAR, and
- OTT hazard analysis.

Other Information Needed for The Performance of Work:

There is no travel or Other Direct Charges (ODCs) associated with the performance of this subtask.

OSFA Point-of-Contact (POC): Grant M. Watson

Performance Evaluation Form

TA: 2 (Facility) **Subtask: 2**		Imp. Fact.	Criteria					Points Awarded
			0	1	2	3	4	---
Schedule / Cost	Interim Schedule Dates	1	Failure to submit a deliverable	No submittal more than 15 days late.	No submittal more than 10 days late.	No submittal more than 5 days late.	No submittal more than 2 days late.	
	Subtask Closure Report	1	Greater than 30 days late	Greater than 10 days late	10 days late - 5 days early	Greater than 5 days early	Greater than 10 days early	
	Cost	1	Cost Variance greater than ± 15%	Cost Variance between ± 10% and ± 15%	Cost Variance between ± 5% and ± 10%	Cost Variance between ± 2% and ± 5%	Cost Variance less than ± 2%	
Technical Performance	Hazards Identified	4	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments	3	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Overall evaluation	4	below average	average	above average	excellent	superior	
Quality	Quality of SAR	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Overall evaluation	2	below average	average	above average	excellent	superior	

0 – Far Below Minimum Acceptable
1 – Below Minimum Acceptable
2 – Minimum Acceptable
3 – Exceeds Minimum Acceptable
4 – Far Exceeds Minimum Acceptable

Total Points Awarded:	
Total Possible Points:	58
Grade Percentage:	

Subtask 3: Safety Analysis of Planned Upgrades to the Transonic Dynamics Tunnel (TDT).

Task Description:

The contractor shall perform the necessary work, as outlined below, to support two planned upgrades at the Transonic Dynamics Tunnel (TDT). The first is a productivity enhancement project slated for a Critical Design Review (CDR) mid May 2000 with a construction contract to be awarded approximately November 2000. The second is a seals and control system upgrade that is in an early planing phase.

Productivity Enhancement Project (PEP)

The contractor shall review a draft Preliminary Hazards Analysis (PHA) previously performed on the TDT Productivity Enhancement Project (PEP). The PHA will be provided to the contractor in the form of a draft Safety Analysis Report (SAR) and presentation charts. The review of the PHA shall be consistent with the requirements of LAPG 1740.4, "Facility System Safety and Configuration Management Handbook" and will include:

- Identification of any new hazards and undesired events,
- Identification of existing undesired events affected by the TDT PEP,
- Documentation of hazard abatements or recommendation of required hazard abatements for new and existing undesired event in order to have an acceptable Risk Assessment Code (RAC),
- Review of drawings and procedures, and
- Discussions with facility and engineering personnel to ensure the accuracy of the PHA.

The contractor shall document its findings in the form of a presentation and shall presents the results at the CDR. As a minimum the presentation shall include:

- A list of undesired events,
- A list of open issues,
- A list of interlocks,
- Detailed discussion of any undesired events with a RAC of 1 or 2,
- A critical items list,
- Status of configuration controlled documents, which the contractor shall determine, and
- A list of any recommendations.

In addition, there shall be a chart for each new and existing undesired event affected by the TDT PEP. For each undesired event, the effect(s), cause(s), hazard abatements, and RAC shall be provided. After completion of the CDR, the PHA shall be updated to reflect any recommendations of the CDR panel. This shall be accomplished by updating the CDR presentation charts accordingly.

The contractor shall perform a safety review of the construction specifications and drawings being provided with the specifications. This review shall ensure the appropriate hazard abatements are properly identified in the construction specifications. A list of hazard abatements cross-referenced to the appropriate location in the construction specifications shall be developed.

The contractor shall perform a hazard analysis of the construction phase of the TDT PEP. The purpose of this analysis is not to identify typical personnel hazards that are present during construction (i.e., slips, trips and falls) but hazards to personnel and equipment that are "unique." The contractor shall develop a list of all identified hazards. This list shall include a risk assessment and describe any planned abatements documented in the construction specifications. If required, the contractor shall propose hazard abatements to reduce any unacceptable risks to an acceptable level.

Seals and Control System Upgrade

The contractor shall perform a PHA on the TDT seals and control system upgrade. The PHA shall be consistent with the requirements of LAPG 1740.4, "Facility System Safety and Configuration Management Handbook" and will include:

- Identification of any new hazards and undesired events,
- Identification of existing undesired events affected by the TDT seals and control system upgrade,
- Documentation of hazard abatements or recommendation of required hazard abatements for new and existing undesired event in order to have an acceptable Risk Assessment Code (RAC),
- Review drawings and procedures, and
- Discussions with facility personnel and engineering personnel to ensure the accuracy of the PHA.

The contractor shall document the PHA in the form of a presentation that shall include:

- A list of undesired events,
- A list of interlocks,
- A list of open issues,
- Detailed discussion of any undesired events with a RAC of 1 or 2,
- A critical items list, and
- A list of any recommendations.

In addition, there shall be a chart for each new and existing undesired event affected by the TDT seals and control system upgrade. For each undesired event, the effect(s), cause(s), hazard abatements, and RAC shall be provided.

Deliverables/Milestones:

Deliverable/Milestone	Date Required
1. Conduct meeting with POC to discuss review of PHA for the TDT PEP.	1 week after notice to proceed
2. CDR Presentation Charts for the TDT PEP.	2 weeks prior to CDR (~ mid May 2000)
3. List of hazard abatements cross-referenced to construction specifications for the TDT PEP.	1 week prior to spec review (~ mid June 2000)
4. List of construction unique hazards for the TDT PEP.	1 week prior to spec review (~ mid June 2000)
5. Draft PHA for TDT seals and control system upgrade.	January 12, 2001
6. Subtask closure report that shall include • A review of the subtask and items completed; • A summary of findings and recommendations, and • A final version of items 2-5.	April 9, 2001

Special Deliverable requirements:

1. Items 2 through 5 shall be submitted as hardcopies only.
2. The task closure report (i.e., item 6) and all deliverables associated with the closure report shall have a software file submitted along with a hardcopy. The software file of any presentation shall be PowerPoint for Windows. The other files shall be Microsoft Word for Windows.

Metrics:

See performance evaluation form.

Government Furnished Items:

A draft PHA of the TDT PEP will be provided to the contractor in the form of SAR and draft presentation charts. The SAR will be provided as a hardcopy. The CDR charts will be provided as a hardcopy along with a PowerPoint for Windows file.

Other Information Needed for The Performance of Work:

There is no travel or Other Direct Charges (ODCs) associated with the performance of this subtask.

OSFA Point-of-Contact (POC): Grant M. Watson

Performance Evaluation Form

TA: 2 (Facility) Subtask: 3		Imp. Fact.	Criteria					Points Awarded
			0	1	2	3	4	---
Schedule / Cost	Interim Schedule Dates	1	Failure to submit a deliverable	No submittal more than 15 days late.	No submittal more than 10 days late.	No submittal more than 5 days late.	No submittal more than 2 days late.	
	Subtask Closure Report	1	Greater than 30 days late	Greater than 10 days late	10 days late - 5 days early	Greater than 5 days early	Greater than 10 days early	
	PDR Charts for TDT PEP	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	Cost	1	Cost Variance greater than ± 15%	Cost Variance between ± 10% and ± 15%	Cost Variance between ± 5% and ± 10%	Cost Variance between ± 2% and ± 5%	Cost Variance less than ± 2%	
Technical Performance	Hazards Identified – TDT PEP	4	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments – TDT PEP	3	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Hazards Identified – TDT Seal & Controls	4	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments – TDT Seal & Controls	3	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Overall evaluation	4	below average	average	above average	excellent	superior	
Quality	Quality of CDR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Overall evaluation	2	below average	average	above average	excellent	superior	

0 – Far Below Minimum Acceptable
1 – Below Minimum Acceptable
2 – Minimum Acceptable
3 – Exceeds Minimum Acceptable
4 – Far Exceeds Minimum Acceptable

Total Points Awarded:	
Total Possible Points:	76
Grade Percentage:	

Subtask 4: 31" Mach 10 Tunnel Facility Automation, FY-'00 CoF Project.

Task Description:

This subtask is to provide the necessary safety documentation and support associated with the modification and shakedown of the 31" Mach 10 Tunnel Facility Automation, FY-'00 CoF Project. The scope of the project is to provide a facility automation system that will control air and vacuum valves and heaters using PLC and Labview software. This subtask will be completed in to phases as outlined below.

Phase 1: Support Prior to Critical Design Review (CDR).

The contractor shall review a draft Hazards Analysis (HA) previously performed on the 31" Mach 10 Tunnel Facility Automation, FY-'00 CoF Project. The HA will be provided to the contractor in the form of a draft Safety Analysis Report (SAR) and presentation charts. The review of the HA shall be consistent with the requirements of LAPG 1740.4, "Facility System Safety and Configuration Management Handbook" and will include:

- Identification of any new hazards and undesired events,
- Identification of existing undesired events affected by this project,
- Documentation of hazard abatements or recommendation of required hazard abatements for new and existing undesired event in order to have an acceptable Risk Assessment Code (RAC),
- Review of drawings and procedures, and
- Discussions with facility and engineering personnel to ensure the accuracy of the PHA.

The contractor shall document its findings in the form of a presentation and shall presents the results at the Critical Design Review (CDR). As a minimum, the presentation shall include:

- A list of undesired events,
- A list of open issues,
- A list of interlocks,
- Detailed discussion of any undesired events with a RAC of 1 or 2,
- A critical items list,
- Status of configuration controlled documents, which the contractor shall determine, and
- A list of any recommendations.

In addition, there shall be a chart for each new and existing undesired event affected by the project. For each undesired event, the effect(s), cause(s), hazard abatements, and RAC shall be provided.

Phase 2: Support Project Completion.

During the construction and integrated testing, the contractor shall perform the tasks outlined below.

- The contractor shall review drawings, procedures, and design calculation results/reports to ensure the correctness of the hazards analysis and inclusion of safety interlocks.
- The contractor shall review construction changes for impact on the hazards analysis. All changes reviewed, and the results, shall be documented.
- The contractor shall perform follow-up activities to insure the drawings and documentation required for inclusion into the Configuration Management Program are being handled as required by LAPG 1740.4, "Facility System Safety and Configuration Management Handbook."
- The contractor shall develop a list of safety requirements for inclusion into the Standard Operating Procedures (SOPs) and review/redline the SOPs as required. The contractor shall participate in a walk-through or demonstration of the procedures to provide any required safety inputs.
- The contractor shall review the shakedown plans to ensure all safety features are being tested and that the shakedown is being performed safely.

During construction, the SAR shall be updated to reflect the hazard analysis. This SAR shall reflect all changes that have occurred since the CDR and any changes or testing expected to occur during integrated testing (i.e., interlock testing). These types of items shall be considered open items and identified as such at the Integrated Systems Review (ISR). At the completion of the Operational Readiness Review (ORR) a final version of the SAR reflected the "as-built" condition of the tunnel modifications shall be completed.

The contractor shall develop presentations charts for the ISR and ORR and present the findings at the appropriate design reviews. As a minimum the presentation charts for an ISR shall include:

- A list of undesired events,
- A list of open issues,
- A list of interlocks,
- Detailed discussion of any undesired events with a RAC of 1 or 2,
- A critical items list,
- Status of configuration controlled documents, and
- A list of any recommendations.

In addition, a chart for each undesired event that includes its effect(s), cause(s), hazard abatements, and RAC shall be prepared.

The ORR charts shall report on the status of any safety action items assigned at the ISR and the open issues presented at the ISR. The ORR charts shall also report any safety related anomalies that occurred during integrated systems checkout.

Deliverables/Milestones:

Deliverable/Milestone	Date Required
1. Conduct meeting with POC to discuss review of HA.	1 week after notice to proceed

2. CDR Presentation Charts.	2 weeks prior to CDR (~ mid May 2000)
3. List of safety procedure requirements to be worked into final SOPs.	20 days prior to ISR (~ September 2000)
4. List of construction changes and a safety review of each.	20 days prior to ISR (~ September 2000)
5. ISR Presentation Charts.	20 days prior to ISR (~ September 2000)
6. Draft SAR	At the ISR (October 2000)
7. ORR Presentation Charts.	10 days prior to ORR (~ December 2000)
8. Final SAR	15 days after ORR (~ January 2000)
9. Subtask closure report that shall include: • A review of the subtask and items completed; • A summary of findings & recommendations, and • A final version of items 2-8.	February 23, 2001

Special Deliverable requirements:

1. Items 1 through 7 shall be submitted as hardcopies only.
2. The task closure report (i.e., item 9) and all deliverables associated with the closure report shall have a software file submitted along with a hardcopy. The software file of any presentation shall be PowerPoint for Windows. The other files shall be Microsoft Word for Windows.
3. The final SAR shall be submitted in Microsoft Word for Windows and Acrobat "PDF." The PDF files shall be of a form that allows assembly of a complete SAR by appending a file to a PDF file of a SARs title page and revision page(s). Note, the contractor is not responsible for the PDF file of a SARs title page and revision page(s).

Metrics:
See performance evaluation form.

Government Furnished Items:
A draft HA of the 31" Mach 10 Tunnel Facility Automation, FY-'00 CoF Project will be provided to the contractor in the form of a SAR and draft presentation charts. The SAR will be provided as a hardcopy along with a Microsoft Word file. The CDR charts will be provided as a hardcopy along with a PowerPoint for Windows file.

Other Information Needed for The Performance of Work:
There is no travel or Other Direct Charges (ODCs) associated with the performance of this subtask.

OSFA Point-of-Contact (POC): David Barker

Performance Evaluation Form

TA: 2 (Facility) Subtask: 4		Imp. Fact.	Criteria					Points Awarded
			0	1	2	3	4	---
Schedule / Cost	Interim Schedule Dates	1	Failure to submit a deliverable	No submittal more than 15 days late.	No submittal more than 10 days late.	No submittal more than 5 days late.	No submittal more than 2 days late.	
	Subtask Closure Report	1	Greater than 30 days late	Greater than 10 days late	10 days late - 5 days early	Greater than 5 days early	Greater than 10 days early	
	CDR Charts	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	ISR Charts	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	ORR Charts	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	Cost	1	Cost Variance greater than ± 15%	Cost Variance between ± 10% and ± 15%	Cost Variance between ± 5% and ± 10%	Cost Variance between ± 2% and ± 5%	Cost Variance less than ± 2%	
Technical Performance	Hazards Identified	4	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments	3	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Overall evaluation	4	below average	average	above average	excellent	superior	
Quality	Quality of the CDR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of ISR the Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of the ORR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of the SAR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Overall evaluation	2	below average	average	above average	excellent	superior	

0 – Far Below Minimum Acceptable
1 – Below Minimum Acceptable
2 – Minimum Acceptable
3 – Exceeds Minimum Acceptable
4 – Far Exceeds Minimum Acceptable

Total Points Awarded:	
Total Possible Points:	94
Grade Percentage:	

Subtask 5: Cockpit Motion Facility.

Task Description:

This subtask is to provide the necessary safety documentation and support associated with the construction and start-up of the Cockpit Motion Facility (CMF), Building 1268D. This facility includes the Motion Base, its associated hardware and software, the Generic Flight Deck (GFD), the Research Flight Deck (RFD), and the Integrated Flight Deck (IFD). The two areas to be supported are: (1) hazards analysis & design team support and (2) design reviews.

Hazards Analysis and Design Team Support

The contractor shall complete the hazards analyses associated with the four elements of the CMF: Motion Base, GFD, RFD, and IFD. A Safety Analysis Report (SAR) shall be developed for each of these four items. The contractor will be provided draft SARs for the Motion Base, GFD, and RFD. The SARs shall be completed in accordance with the requirements of LAPG 1740.4, "Facility System Safety and Configuration Management Handbook" and will include:

- Identification of all hazards and undesired events,
- Documentation of hazard abatements or recommendation of required hazard abatements for all undesired event in order to have an acceptable Risk Assessment Code (RAC),
- Development of any schematics that greatly increase the readers ability to understand the SAR.

In addition to developing four SARs, the contractor shall perform the tasks listed below.

- The contractor shall review drawings, procedures, and design calculation results/reports to ensure the correctness of the hazard analysis and inclusion of safety interlocks.
- The contractor shall review construction changes for impact on the safety analysis.
- The contractor shall perform follow-up activities to insure the drawings and documentation required for inclusion into the Configuration Management Program are being handled as required by LAPG 1740.4, "Facility System Safety and Configuration Management Handbook."
- The contractor shall develop a list of safety requirements for inclusion into the Standard Operating Procedures (SOPs) and review/redline the SOPs as required. The contractor shall participate in a walk-through or demonstration of the procedures to provide any required safety inputs.
- The contractor shall review the shakedown plans to ensure all safety features are being tested and that the shakedown is being performed safely.
- The contractor shall attend two status meetings that are held on a weekly basis (a total of 4 hours per week).

Design Reviews

The contractor shall develop presentations charts for:

- The Motion Base Integrated Systems Review (ISR) and Operational Readiness Review (ORR)
- The RFD ORR, and
- The GFD ISR and ORR.

The contractor shall be prepared to present the findings at the appropriate design reviews. Prior to the ISR for the Motion Base the contractor shall provide to the Government a list of all interlocks implemented in the PLC cross-referenced to the appropriate location in the PLC ladder logic.

As a minimum the presentation charts for an ISR shall include:

- A list of undesired events,
- A list of open issues,
- A list of interlocks,
- Detailed discussion of any undesired events with a RAC of 1 or 2,
- A critical items list,
- Status of configuration controlled documents, and
- A list of any recommendations.

In addition, a chart for each undesired event that includes its effect(s), cause(s), hazard abatements, and RAC shall be prepared.

The ORR charts shall report on the status of any safety action items assigned at the ISR and the open issues presented at the ISR. The ORR charts shall also report any safety related anomalies that occurred during integrated systems checkout.

Deliverables/Milestones:

Deliverable/Milestone	Date Required
1. ISR Presentation Charts for the Motion Base	20 days prior to ISR (~ August 2000)
2. Draft Motion Base SAR	At the ISR (~ September 2000)
3. ORR Presentation Charts for the Motion Base	10 days prior to ORR (~ October 2000)
4. Final Motion Base SAR	15 days after ORR (~ November 2000)
5. Draft RFD SAR	20 days prior to ORR (~ September 2000)
6. ORR Presentation Charts for the RFD	10 days prior to ORR (~ October 2000)
7. Final RFD SAR	15 days after ORR (~ November 2000)
8. ISR Presentation Charts for the GFD.	10 days prior to ISR (~ October 2000)
9. List of interlocks cross-referenced to PLC logic.	10 days prior to ISR (~ October 2000)
10. Draft GFD SAR	At the ISR (~ November 2000)
11. ORR Presentation Charts for the GFD	10 days prior to ORR (~ December 2000)
12. Final GFD SAR	15 days after ORR (~ January 2001)
13. Draft IFD SAR	February 15, 2001
14. Subtask closure report that shall include • A review of the subtask and items completed; • A summary of findings & recommendations, and • Final version of items 1, 3, 4, 6, 7, 8, 10, 11 & 12.	

Special Deliverable requirements:

1. Items 1 through 13 shall be submitted as hardcopies only.
2. The task closure report (i.e., item 14) and all deliverables associated with the closure report shall have a software file submitted along with a hardcopy. The software file of any presentation shall be PowerPoint for Windows. The other files shall be Microsoft Word for Windows.
3. The final SARs (items 4, 7, & 12) shall be submitted in Microsoft Word for Windows and Acrobat "PDF." The PDF files shall be of a form that allows assembly of a complete SAR by appending a file to a PDF file of a SARs title page and revision page(s). Note, the contractor is not responsible for the PDF file of a SARs title page and revision page(s).

Metrics:

See performance evaluation form.

Government Furnished Items:

The contractor will be provided draft SARs for the Motion Base, GFD, and RFD in Microsoft Word for Windows..

Other Information Needed for The Performance of Work:

There is no travel or Other Direct Charges (ODCs) associated with the performance of this subtask.

OSFA Point-of-Contact (POC): Grant M. Watson

Performance Evaluation Form

TA: 2 (Facility) Subtask: 5		Imp. Fact.	Criteria					Points Awarded
			0	1	2	3	4	---
Schedule / Cost	Interim Schedule Dates	1	Failure to submit a deliverable	No submittal more than 15 days late.	No submittal more than 10 days late.	No submittal more than 5 days late.	No submittal more than 2 days late.	
	Subtask Closure Report	1	Greater than 30 days late	Greater than 10 days late	10 days late - 5 days early	Greater than 5 days early	Greater than 10 days early	
	ISR Charts – Motion Base	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	ORR Charts – Motion Base	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	ORR Charts – RFD	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	ISR Charts – GFD	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	ORR Charts – GFD	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	Cost	1	Cost Variance greater than ± 15%	Cost Variance between ± 10% and ± 15%	Cost Variance between ± 5% and ± 10%	Cost Variance between ± 2% and ± 5%	Cost Variance less than ± 2%	
Technical Performance	Hazards Identified – Motion Base	4	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments – Motion Base	3	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Hazards Identified - Simulators	4	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments - Simulators	3	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Overall evaluation	4	below average	average	above average	excellent	superior	

continued next page

TA: 2 (Facility) Subtask: 5 (cont.)		Imp. Fact.	Criteria					Points Awarded
			0	1	2	3	4	---
Quality	Quality of the ISR Charts – Motion Base	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of the ORR Charts – Motion Base	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of the ORR Charts – RFD	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of the ISR Charts – GFD	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of the ORR Charts – GFD	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of SAR – Motion Base	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of the SAR – RFD	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of the SAR – GFD	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of the SAR – IFD	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Overall evaluation	2	below average	average	above average	excellent	superior	

0 – Far Below Minimum Acceptable
1 – Below Minimum Acceptable
2 – Minimum Acceptable
3 – Exceeds Minimum Acceptable
4 – Far Exceeds Minimum Acceptable

Total Points Awarded:	
Total Possible Points:	116
Grade Percentage:	

Subtask 6: Upgrades to 12-Ft Free Flight Tunnel Main Drive (644).

Task Description:

The contractor shall perform a Preliminary Hazards Analysis (PHA) on the planned upgrades to 12-Ft Free Flight Tunnel Main Drive (Bldg. 644). The PHA shall be consistent with the requirements of LAPG 1740.4, "Facility System Safety and Configuration Management Handbook" and will include:

- Identification of any new hazards and undesired events,
- Identification of existing undesired events affected by upgrades to 12-Ft Free Flight Tunnel Main Drive,
- Documentation of hazard abatements or recommendation of required hazard abatements for new and existing undesired event in order to have an acceptable Risk Assessment Code (RAC),
- Review of drawings and procedures, and
- Discussions with facility personnel and engineering personnel to ensure the accuracy of the PHA.

There is an existing RAC 2 undesired event affected by this proposed project, and the contractor shall pay special attention to developing hazard abatement to reduce this undesired event to a RAC 3.

The contractor shall document the PHA in the form of a presentation that shall include:

- A list of undesired events,
- A list of interlocks,
- A list of open issues,
- Detailed discussion of any undesired events with a RAC of 1 or 2,
- A critical items list, and
- A list of any recommendations.

In addition, there shall be a chart for each new and existing undesired event affected by this upgrade. For each undesired event, the effect(s), cause(s), hazard abatements, and RAC shall be provided.

The contractor shall present the results of the PHA at the Critical Design Review (CDR). After completion of the CDR, the PHA shall be updated to reflect any recommendations of the CDR panel. This shall be accomplished by updating the CDR presentation charts accordingly.

The contractor shall perform a hazard analysis of the construction phase of the planned upgrades to 12-Ft Free Flight Tunnel Main Drive. The purpose of this analysis is not to identify typical personnel hazards that are present during construction (i.e., slips, trips and falls) but hazards to personnel and equipment that are "unique." The contractor shall develop a list of all identified hazards. This list shall include a risk assessment and describe any planned abatements. If

required, the contractor shall propose hazard abatements to reduce any unacceptable risks to an acceptable level.

Deliverables/Milestones:

Deliverable/Milestone	Date Required
1. Conduct meeting with POC to review the PHA.	4 week after notice to proceed
2. CDR Presentation Charts.	2 weeks prior to CDR (~ mid June 2000)
3. List of construction unique hazards.	March 1, 2001
4. Subtask closure report that shall include: • A review of the subtask and items completed; • A summary of findings & recommendations, and • A final version of items 2 and 3.	April 9, 2001

Special Deliverable requirements:

1. Items 2 and 3 shall be submitted as hardcopies only.
2. The task closure report (i.e., item 4) and all deliverables associated with the closure report shall have a software file submitted along with a hardcopy. The software file of any presentation shall be PowerPoint for Windows. The other files shall be Microsoft Word for Windows.

Metrics:

See performance evaluation form.

Government Furnished Items:

No special items will be provided with this subtask.

Other Information Needed for The Performance of Work:

There is no travel or Other Direct Charges (ODCs) associated with the performance of this subtask.

OSFA Point-of-Contact (POC): Grant M. Watson

Performance Evaluation Form

TA: 2 (Facility) Subtask: 6		Imp. Fact.	Criteria					Points Awarded
			0	1	2	3	4	---
Schedule / Cost	Interim Schedule Dates	1	Failure to submit a deliverable	No submittal more than 15 days late.	No submittal more than 10 days late.	No submittal more than 5 days late.	No submittal more than 2 days late.	
	Subtask Closure Report	1	Greater than 30 days late	Greater than 10 days late	10 days late - 5 days early	Greater than 5 days early	Greater than 10 days early	
	PDR Charts	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	Cost	1	Cost Variance greater than ± 15%	Cost Variance between ± 10% and ± 15%	Cost Variance between ± 5% and ± 10%	Cost Variance between ± 2% and ± 5%	Cost Variance less than ± 2%	
Technical Performance	Hazards Identified	4	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments	3	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Overall evaluation	4	below average	average	above average	excellent	superior	
Quality	Quality of PDR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Overall evaluation	2	below average	average	above average	excellent	superior	

0 – Far Below Minimum Acceptable
1 – Below Minimum Acceptable
2 – Minimum Acceptable
3 – Exceeds Minimum Acceptable
4 – Far Exceeds Minimum Acceptable

Total Points Awarded:	
Total Possible Points:	62
Grade Percentage:	

Subtask 7: 14 X 22 Subsonic Tunnel Main Drive Replacement

Task Description:

The contractor shall perform the necessary hazard analysis to identify and document the risks associated with the replacement of the main drive for the 14 X 22 foot Subsonic Tunnel, Building 1212C.

The reporting of the hazard analysis shall be consistent with LHB-1740.4, *Facility System Safety and Configuration Management Handbook* requirements and will include:

- Identification of any hazards and the undesired events associated with the project or the impact of these control changes on existing hazards and hazard abatements found during design and operational reviews.
- Documentation of hazard abatements or recommendation of necessary hazard abatements for each undesired event in order to have an acceptable Risk Assessment Classification.
- Modification of any schematics presently in the SAR to reflect the new installations or generating new schematics for inclusion into the SAR.
- Review of new and existing drawings, procedures, and design calculation results/reports to ensure the correctness of the hazard analysis for the proposed design.
- Reviewing changes to the original construction specification and any construction changes for impact on the safety analysis.
- Performing follow-up activities to insure the drawings and documentation required for inclusion into the Configuration Management Program are being handled as required by LHB 1710.4, *Facility System Safety and configuration Management Handbook* and insuring safety interlocks have been successfully tested.
- Providing safety, reliability and maintainability requirements for inclusion into the Standard Operating Procedures, reviewing/redlining the SOP's and reviewing shakedown plans. A walk-through or demonstration of the procedures may be required.
- Providing support at the facility during construction and shakedown and interfacing with the research customer and FSED as required to support completion of this task.
- Reviewing redlined and as-built drawings for inclusion of safety interlocks.
- Participating in the CDR, ISR and ORR to present the findings and recommendations of the hazard analysis, and CM document status.

Deliverables/Milestones:

Deliverable/Milestone	Date Required
1. Provide a task report including • List of safety interlocks affected by this modification • List of safety procedure requirements to be worked into final SOPs • Short assessment of changes to system • Proposed PDR presentation	15 days prior to PDR
2. Present: • Listing of identified hazards and undesired events with associated RAC • Summary of Safety Activities	PDR
3. Provide a task report including • Short assessment of changes to system design since PDR • Proposed CDR presentation	15 days prior to CDR
4. Present: • Listing of identified hazards and undesired events with associated RAC • Summary of Safety Activities	CDR
5. Provide a task report including • Results of the SOP and shakedown plan review • A copy of proposed ISR presentation • Status of CCD drawings • Preliminary redline changes to the SAR	30 days prior to ISR
6. Present: • Listing of identified hazards and undesired events with associated RAC • Summary of Safety Activities • Status of CCD Documents	ISR
7. Provide a final task report including: • A list of safety issues identified during shakedown and resolution • Status of CCD documents • Copy of proposed ORR presentation • Final redlined SAR	30 days prior to ORR
8. Present: • Listing of identified hazards and undesired events with associated RACs • Summary of Safety Activities • Status of CCD documents	ORR

Special Deliverable requirements:

1. Items 1 through 7 shall be submitted as hardcopies only.
3. The task closure report, and its subelements, shall be submitted as hardcopy, and a software copy of each deliverable shall be submitted in Microsoft Word for PC on a 3.5" disk.
2. The final SAR shall also be submitted in Acrobat "PDF." This PDF file shall be of a form that allows assembly of a complete SAR by appending it to a PDF file of a SARs title page and revision page(s). Note, the contractor is not responsible for the PDF file of a SARs title page and revision page(s).

Metrics:

See performance evaluation form.

Government Furnished Items:

No special items will be provided with this subtask.

Other Information Needed for The Performance of Work:

There shall be no travel or Other Direct Charges (ODCs) associated with the performance of this subtask.

OSFA Point-of-Contact (POC): David Barker

Performance Evaluation Form

TA: 2 (Facility) Subtask: 7		Imp. Fact.	Criteria					Points Awarded
			0	1	2	3	4	---
Schedule / Cost	Interim Schedule Dates	1	Failure to submit a deliverable	No submittal more than 15 days late.	No submittal more than 10 days late.	No submittal more than 5 days late.	No submittal more than 2 days late.	
	Subtask Closure Report	1	Greater than 30 days late	Greater than 10 days late	10 days late - 5 days early	Greater than 5 days early	Greater than 10 days early	
	PDR Charts	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	CDR Charts	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	Cost	1	Cost Variance greater than ± 15%	Cost Variance between ± 10% and ± 15%	Cost Variance between ± 5% and ± 10%	Cost Variance between ± 2% and ± 5%	Cost Variance less than ± 2%	
Technical Performance	Hazards Identified	4	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments	3	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Overall evaluation	4	below average	average	above average	excellent	superior	
Quality	Quality of PDR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of CDR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of SAR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Overall evaluation	2	below average	average	above average	excellent	superior	

0 – Far Below Minimum Acceptable
1 – Below Minimum Acceptable
2 – Minimum Acceptable
3 – Exceeds Minimum Acceptable
4 – Far Exceeds Minimum Acceptable

Total Points Awarded:	
Total Possible Points:	82
Grade Percentage:	

Subtask 8: 15" Mach 6 Tunnel Settling Chamber Replacement

Task Description:

The contractor shall perform the necessary hazard analysis to identify and document the risks associated with the replacement of the settling chamber and associated equipment for the 15" Mach 6 Tunnel, Building 1251.

The reporting of the hazard analysis shall be consistent with LHB-1740.4, *Facility System Safety and Configuration Management Handbook* requirements and will include:

- Identification of any hazards and the undesired events associated with the project or the impact of these control changes on existing hazards and hazard abatements found during design and operational reviews.
- Documentation of hazard abatements or recommendation of necessary hazard abatements for each undesired event in order to have an acceptable Risk Assessment Classification.
- Modification of any schematics presently in the SAR to reflect the new installations or generating new schematics for inclusion into the SAR.
- Review of new and existing drawings, procedures, and design calculation results/reports to ensure the correctness of the hazard analysis for the proposed design.
- Reviewing changes to the original construction specification and any construction changes for impact on the safety analysis.
- Performing follow-up activities to insure the drawings and documentation required for inclusion into the Configuration Management Program are being handled as required by LHB 1710.4, *Facility System Safety and configuration Management Handbook* and insuring safety interlocks have been successfully tested.
- Providing safety, reliability and maintainability requirements for inclusion into the Standard Operating Procedures, reviewing/redlining the SOP's and reviewing shakedown plans. A walk-through or demonstration of the procedures may be required.
- Providing support at the facility during construction and shakedown and interfacing with the research customer and FSED as required to support completion of this task.
- Reviewing redlined and as-built drawings for inclusion of safety interlocks.
- Participating in the CDR, ISR and ORR to present the findings and recommendations of the hazard analysis, and CM document status.

Deliverables/Milestones:

Deliverable/Milestone	Date Required
1. Provide a task report including • List of safety interlocks affected by this modification • List of safety procedure requirements to be worked into final SOPs • Short assessment of changes to system • Proposed CDR presentation	15 days prior to CDR
2. Present: • Listing of identified hazards and undesired events with associated RAC • Summary of Safety Activities	CDR
3. Provide a task report including • Results of the SOP and shakedown plan review • A copy of proposed ISR presentation • Status of CCD drawings • Preliminary redline changes to the SAR	30 days prior to ISR
4. Present: • Listing of identified hazards and undesired events with associated RAC • Summary of Safety Activities • Status of CCD Documents	ISR
5. Provide a final task report including: • A list of safety issues identified during shakedown and resolution • Status of CCD documents • Copy of proposed ORR presentation • Final redlined SAR	30 days prior to ORR
6. Present: • Listing of identified hazards and undesired events with associated RACs • Summary of Safety Activities • Status of CCD documents	ORR

Special Deliverable requirements:

1. 1.Items 1 through 4 shall be submitted as hardcopies only.
2. The task closure report, and its subelements, shall be submitted as hardcopy, and a software copy of each deliverable shall be submitted in Microsoft Word for PC on a 3.5" disk.
3. The final SAR shall also be submitted in Acrobat "PDF." This PDF file shall be of a form that allows assembly of a complete SAR by appending it to a PDF file of a SARs

title page and revision page(s). Note, the contractor is not responsible for the PDF file of a SARs title page and revision page(s).

Metrics:

See performance evaluation form.

Government Furnished Items:

No special items will be provided with this subtask.

Other Information Needed for The Performance of Work:

There shall be no travel or Other Direct Charges (ODCs) associated with the performance of this subtask.

OSFA Point-of-Contact (POC): David Barker

Performance Evaluation Form

TA: 2 (Facility) Subtask: 8		Imp. Fact.	Criteria					Points Awarded
			0	1	2	3	4	---
Schedule / Cost	Interim Schedule Dates	1	Failure to submit a deliverable	No submittal more than 15 days late.	No submittal more than 10 days late.	No submittal more than 5 days late.	No submittal more than 2 days late.	
	Subtask Closure Report	1	Greater than 30 days late	Greater than 10 days late	10 days late - 5 days early	Greater than 5 days early	Greater than 10 days early	
	CDR Charts	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	ISR Charts	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	ORR Charts	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	Cost	1	Cost Variance greater than ± 15%	Cost Variance between ± 10% and ± 15%	Cost Variance between ± 5% and ± 10%	Cost Variance between ± 2% and ± 5%	Cost Variance less than ± 2%	
Technical Performance	Hazards Identified	4	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments	3	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Overall evaluation	4	below average	average	above average	excellent	superior	
Quality	Quality of the CDR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of ISR the Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of the ORR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of the SAR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Overall evaluation	2	below average	average	above average	excellent	superior	

0 – Far Below Minimum Acceptable
1 – Below Minimum Acceptable
2 – Minimum Acceptable
3 – Exceeds Minimum Acceptable
4 – Far Exceeds Minimum Acceptable

Total Points Awarded:	
Total Possible Points:	94
Grade Percentage:	

Subtask 9: Upgrade the Controls and Fuel Systems for the Arc-Heated ScramJet Test Facility (AHSTF), Building 1247B, FY-'00 CoF Project.

Task Description:

This subtask is to provide the necessary safety documentation and support associated with the modification and shakedown of the Controls and Fuel Systems for the Arc-Heated ScramJet Test Facility (AHSTF), Building 1247B, FY-'00 CoF Project. A special part of this task is to identify all existing interlocks and ensure their implementation in the PLC.

The contractor shall review a draft Hazards Analysis (HA) previously performed. The review of the HA shall be consistent with the requirements of LAPG 1740.4, "Facility System Safety and Configuration Management Handbook" and will include:

- Identification of any new hazards and undesired events,
- Identification of existing undesired events affected by this project,
- Documentation of hazard abatements or recommendation of required hazard abatements for new and existing undesired event in order to have an acceptable Risk Assessment Code (RAC),
- Review of drawings and procedures, and
- Discussions with facility and engineering personnel to ensure the accuracy of the PHA.

During the construction and integrated testing, the contractor shall perform the tasks outlined below.

- The contractor shall review drawings, procedures, and design calculation results/reports to ensure the correctness of the hazards analysis and inclusion of safety interlocks.
- The contractor shall review construction changes for impact on the hazards analysis. All changes reviewed, and the results, shall be documented.
- The contractor shall perform follow-up activities to insure the drawings and documentation required for inclusion into the Configuration Management Program are being handled as required by LAPG 1740.4, "Facility System Safety and Configuration Management Handbook."
- The contractor shall develop a list of safety requirements for inclusion into the Standard Operating Procedures (SOPs) and review/redline the SOPs as required. The contractor shall participate in a walk-through or demonstration of the procedures to provide any required safety inputs.
- The contractor shall review the shakedown plans to ensure all safety features are being tested and that the shakedown is being performed safely.

The SAR shall be updated to reflect the hazard analysis. This SAR shall reflect all changes that have occurred since the CDR and any changes or testing expected to occur during integrated testing (i.e., interlock testing). These types of items shall be considered open items and identified as such at the Integrated Systems Review (ISR). At the completion of the Operational Readiness Review (ORR) a final version of the SAR reflected the "as-built" condition of the tunnel modifications shall be completed. Prior to the ISR the contractor shall provide to the

Government a list of all interlocks implemented in the PLC cross-referenced to the appropriate location in the PLC ladder logic.

The contractor shall develop presentations charts for the ISR and ORR and present the findings at the appropriate design reviews. As a minimum the presentation charts for an ISR shall include:

- A list of undesired events,
- A list of open issues,
- A list of interlocks,
- Detailed discussion of any undesired events with a RAC of 1 or 2,
- A critical items list,
- Status of configuration controlled documents, and
- A list of any recommendations.

In addition, a chart for each undesired event that includes its effect(s), cause(s), hazard abatements, and RAC shall be prepared.

The ORR charts shall report on the status of any safety action items assigned at the ISR and the open issues presented at the ISR. The ORR charts shall also report any safety related anomalies that occurred during integrated systems checkout.

Deliverables/Milestones:

Deliverable/Milestone	Date Required
1. Conduct meeting with POC to discuss review of HA.	June 1, 2000
2. List of existing interlocks.	June 1, 2000
3. List of safety procedure requirements to be worked into final SOPs.	20 days prior to ISR
4. List of construction changes and a safety review of each.	20 days prior to ISR
5. ISR Presentation Charts.	20 days prior to ISR
6. List of interlocks cross-referenced to PLC logic.	20 days prior to ISR
7. Draft SAR	At the ISR
8. ORR Presentation Charts.	10 days prior to ORR
9. Final SAR	15 days after ORR
10. Subtask closure report that shall include: • A review of the subtask and items completed; • A summary of findings & recommendations, and • A final version of items 2-9.	April 12, 2001

Special Deliverable requirements:

1. Items 1 through 9 shall be submitted as hardcopies only.
2. The task closure report (i.e., item 10) and all deliverables associated with the closure report shall have a software file submitted along with a hardcopy. The software file of any presentation shall be PowerPoint for Windows. The other files shall be Microsoft Word for Windows.
3. The final SAR shall be submitted in Microsoft Word for Windows and Acrobat "PDF." The PDF files shall be of a form that allows assembly of a complete SAR by appending a file to a PDF file of a SARs title page and revision page(s). Note, the contractor is not responsible for the PDF file of a SARs title page and revision page(s).

Metrics:

See performance evaluation form.

Government Furnished Items:

The SAR will be provided as a hardcopy along with a Microsoft Word file.

Other Information Needed for The Performance of Work:

There is no travel or Other Direct Charges (ODCs) associated with the performance of this subtask.

OSFA Point-of-Contact (POC): Harold Beazley

Performance Evaluation Form

TA: 2 (Facility) Subtask: 9		Imp. Fact.	Criteria					Points Awarded
			0	1	2	3	4	---
Schedule / Cost	Interim Schedule Dates	1	Failure to submit a deliverable	No submittal more than 15 days late.	No submittal more than 10 days late.	No submittal more than 5 days late.	No submittal more than 2 days late.	
	Subtask Closure Report	1	Greater than 30 days late	Greater than 10 days late	10 days late - 5 days early	Greater than 5 days early	Greater than 10 days early	
	ISR Charts	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	ORR Charts	1	Not submitted within 2 days prior to review	2 days late – 2 days prior to review	1 day late - 1 day early	Greater than 2 days early	Greater than 5 days early	
	Cost	1	Cost Variance greater than ± 15%	Cost Variance between ± 10% and ± 15%	Cost Variance between ± 5% and ± 10%	Cost Variance between ± 2% and ± 5%	Cost Variance less than ± 2%	
Technical Performance	Hazards Identified	4	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments	3	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Overall evaluation	4	below average	average	above average	excellent	superior	
Quality	Quality of ISR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of ORR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Quality of SAR Charts	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Overall Engineer's evaluation	2	below average	average	above average	excellent	superior	

0 – Far Below Minimum Acceptable
1 – Below Minimum Acceptable
2 – Minimum Acceptable
3 – Exceeds Minimum Acceptable
4 – Far Exceeds Minimum Acceptable

Total Points Awarded:	
Total Possible Points:	82
Grade Percentage:	

Subtask 10: National Transonic Facility (NTF) Safety Analysis Report (SAR) Update.

Task Description:

The contractor shall revise the existing Safety Analysis Report (SAR) for the National Transonic Facility (NTF) to include any changes to the design and operation of the tunnel due to modifications of the inlet guide vane (IGV) hydraulic system. To accomplish this, the contractor shall perform the necessary analysis to identify new hazards or update existing hazards and the associated risks.

The reporting of the hazard analyses shall be consistent with the requirements of LAPG 1740.4, "Facility System Safety and Configuration Management Handbook" and will include:

- Identification of any new or changed hazards and undesired events associated with the design and operation of the NTF,
- Documentation of hazard abatements or recommendation of required hazard abatements for each undesired event in order to have an acceptable Risk Assessment Classification, and
- Review drawings and procedures and conduct discussions with facility personnel to ensure the correctness of the NTF SAR.

Deliverables/Milestones:

Deliverable/Milestone	Date Required
1. List of changes that have occurred.	June 1, 2000
2. List of new/existing undesired events associated with each change.	June 1, 2000
3. Documented hazard analysis that shall include: • Documentation of the hazard analysis performed in accordance with LAPG 1740.4, • List of existing/recommended procedural safety requirements resulting from changes, and • List of existing/recommended safety interlocks resulting from changes.	August 1, 2000
4. Draft SAR that incorporates the hazard analysis of all changes and required changes to any schematics in the SAR.	August 15, 2000
5. Subtask closure report that shall include: • A review of the subtask and items completed; • A summary of findings & recommendations; and • Final redlined SAR, list of existing/ recommended procedural safety requirements and list of existing/recommended safety interlocks.	September 29, 2000

Special Deliverable requirements:

1. Items 1 through 4 shall be submitted as hardcopies only.
2. Item 5, and its subelements, shall have a software file submitted along with a hardcopy. The software files shall be Microsoft Word for Windows on a 3.5" disk.

Metrics:

See performance evaluation form.

Government Furnished Items:

Microsoft Word version of the existing NTF SAR.

Other Information Needed for The Performance of Work:

There is no travel or Other Direct Charges (ODCs) associated with the performance of this subtask.

OSFA Point-of-Contact (POC): Lloyd Smith

Performance Evaluation Form

TA: 2 (Facility) Subtask: 10		Imp. Fact.	Criteria					Points Awarded
			0	1	2	3	4	---
Schedule / Cost	Interim Schedule Dates	1	Failure to submit a deliverable	No submittal more than 15 days late.	No submittal more than 10 days late.	No submittal more than 5 days late.	No submittal more than 2 days late.	
	Subtask Closure Report	1	Greater than 30 days late	Greater than 10 days late	10 days late - 5 days early	Greater than 5 days early	Greater than 10 days early	
	Cost	1	Cost Variance greater than ± 15%	Cost Variance between ± 10% and ± 15%	Cost Variance between ± 5% and ± 10%	Cost Variance between ± 2% and ± 5%	Cost Variance less than ± 2%	
Technical Performance	Hazards Identified	3	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments	2	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Overall evaluation	3	below average	average	above average	excellent	superior	
Quality	Quality of SAR	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Overall evaluation	2	below average	average	above average	excellent	superior	
							Total Points Awarded:	
							Total Possible Points:	44
							Grade Percentage:	

0 – Far Below Minimum Acceptable
1 – Below Minimum Acceptable
2 – Minimum Acceptable
3 – Exceeds Minimum Acceptable
4 – Far Exceeds Minimum Acceptable

Subtask 11: 15-Inch Mach 6 High Temperature Tunnel Safety Analysis Report (SAR) Update.

Task Description:

The contractor shall revise the existing Safety Analysis Report (SAR) for the 15-Inch Mach 6 High Temperature Tunnel to include any changes to the design and operation of the system since the previous SAR was published. This task is not in support of an ongoing Construction of Facility (CoF) project. Its primary objective is to perform a hazard analysis of facility changes that have occurred since the last time the SAR was updated. To accomplish this, the contractor shall perform the necessary analysis to identify new hazards or update existing hazards and the associated risks.

The reporting of the hazard analyses shall be consistent with the requirements of LAPG 1740.4, "Facility System Safety and Configuration Management Handbook" and will include:

- Identification of any new or changed hazards and undesired events associated with the design and operation of the 15-Inch Mach 6 High Temperature Tunnel,
- Documentation of hazard abatements or recommendation of required hazard abatements for each undesired event in order to have an acceptable Risk Assessment Classification, and
- Review drawings and procedures and conduct discussions with facility personnel to ensure the correctness of the 15-Inch Mach 6 High Temperature Tunnel SAR.

There is currently one redlined change to the SAR that has not yet been incorporated. The contractor shall use the approved version as a "baseline" and review and incorporate the appropriate changes reflected in the redlined version. In addition, the contractor shall identify, analyze, and document in the SAR other changes that have occurred at the 15-Inch Mach 6 High Temperature Tunnel. Updating the SAR shall include electronic revision of schematics in the SAR.

This task includes a safety analysis of the facility modifications associated with the on-going CoF project except for the new settling chamber. The new settling chamber and associated modifications are being addressed under another task.

Deliverables/Milestones:

Deliverable/Milestone	Date Required
1. List of changes that have occurred since previous SAR was published.	May 15, 2000
2. List of new/existing undesired events associated with each change.	May 15, 2000
3. Documented hazard analysis that shall include: 4. Documentation of the hazard analysis performed in accordance with LAPG 1740.4, 5. List of existing/recommended procedural safety requirements resulting from changes, and 6. List of existing/recommended safety interlocks resulting from changes.	July 1, 2000
7. Draft SAR that incorporates the hazard analysis of all changes and required changes to any schematics in the SAR.	July15, 2000
8. Subtask closure report that shall include: • A review of the subtask and items completed; • A summary of findings & recommendations; and • Final SAR, list of existing/recommended procedural safety requirements and list of existing/recommended safety interlocks.	September 1, 2000

Special Deliverable requirements:

1. Items 1 through 4 shall be submitted as hardcopies only.
2. Item 5, and its subelements, shall have a software file submitted along with a hardcopy. The software files shall be Microsoft Word for Windows on a 3.5" disk.
3. The final SAR shall also be submitted in Acrobat "PDF." This PDF file shall be of a form that allows assembly of a complete SAR by appending it to a PDF file of a SARs title page and revision page(s). Note, the contractor is not responsible for the PDF file of a SARs title page and revision page(s).

Metrics:

See performance evaluation form.

Government Furnished Items:

Microsoft Word version of current approved SAR.

Other Information Needed for The Performance of Work:

There is no travel or Other Direct Charges (ODCs) associated with the performance of this subtask.

OSFA Pont-of-Contact (POC): David Barker

Performance Evaluation Form

TA: 2 (Facility) Subtask: 11		Imp. Fact.	Criteria					Points Awarded
			0	1	2	3	4	---
Schedule / Cost	Interim Schedule Dates	1	Failure to submit a deliverable	No submittal more than 15 days late.	No submittal more than 10 days late.	No submittal more than 5 days late.	No submittal more than 2 days late.	
	Subtask Closure Report	1	Greater than 30 days late	Greater than 10 days late	10 days late - 5 days early	Greater than 5 days early	Greater than 10 days early	
	Cost	1	Cost Variance greater than ± 15%	Cost Variance between ± 10% and ± 15%	Cost Variance between ± 5% and ± 10%	Cost Variance between ± 2% and ± 5%	Cost Variance less than ± 2%	
Technical Performance	Hazards Identified	4	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments	3	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Overall evaluation	4	below average	average	above average	excellent	superior	
Quality	Quality of SAR	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Overall evaluation	2	below average	average	above average	excellent	superior	

0 – Far Below Minimum Acceptable
1 – Below Minimum Acceptable
2 – Minimum Acceptable
3 – Exceeds Minimum Acceptable
4 – Far Exceeds Minimum Acceptable

Total Points Awarded:	
Total Possible Points:	58
Grade Percentage:	

Subtask 12: 31-Inch Mach 10 Wind Tunnel Safety Analysis Report (SAR) Update.

Task Description:

The contractor shall revise the existing Safety Analysis Report (SAR) for the 31-Inch Mach 10 Wind Tunnel to include any changes to the design and operation of the system since the previous SAR was published. This task is not in support of an ongoing Construction of Facility (CoF) project. Its primary objective is to perform a hazard analysis of facility changes that have occurred since the last time the SAR was updated. To accomplish this, the contractor shall perform the necessary analysis to identify new hazards or update existing hazards and the associated risks.

The reporting of the hazard analyses shall be consistent with the requirements of LAPG 1740.4, "Facility System Safety and Configuration Management Handbook" and will include:

- Identification of any new or changed hazards and undesired events associated with the design and operation of the 31-Inch Mach 10 Wind Tunnel,
- Documentation of hazard abatements or recommendation of required hazard abatements for each undesired event in order to have an acceptable Risk Assessment Classification, and
- Review drawings and procedures and conduct discussions with facility personnel to ensure the correctness of the 31-Inch Mach 10 Wind Tunnel SAR.

There are currently two redline changes to the SAR that have not yet been incorporated. The contractor shall use the approved version as a "baseline" and review and incorporate the appropriate changes reflected in the redlined versions. In addition, the contractor shall identify, analyze, and document in the SAR other changes that have occurred at the 31-Inch Mach 10 Wind Tunnel. Updating the SAR shall include electronic revision of schematics in the SAR.

This task does not include a safety analysis of the new top tunnel wall and pitot probe or the facility automation project. These modifications are being addressed under other tasks.

Deliverables/Milestones:

Deliverable/Milestone	Date Required
1. List of changes that have occurred since previous SAR was published.	May 15, 2000
2. List of new/existing undesired events associated with each change.	May 15, 2000
3. Documented hazard analysis that shall include: • Documentation of the hazard analysis performed in accordance with LAPG 1740.4, • List of existing/recommended procedural safety requirements resulting from changes, and • List of existing/recommended safety interlocks resulting from changes.	July 1, 2000
4. Draft SAR that incorporates the hazard analysis of all changes and required changes to any schematics in the SAR.	July 15, 2000
5. Subtask closure report that shall include: • A review of the subtask and items completed; • A summary of findings & recommendations; and • Final SAR, list of existing/recommended procedural safety requirements and list of existing/recommended safety interlocks.	September 1, 2000

Special Deliverable requirements:

1. Items 1 through 4 shall be submitted as hardcopies only.
2. Item 5, and its subelements, shall have a software file submitted along with a hardcopy. The software files shall be Microsoft Word for Windows on a 3.5" disk.
3. The final SAR shall also be submitted in Acrobat "PDF." This PDF file shall be of a form that allows assembly of a complete SAR by appending it to a PDF file of a SARs title page and revision page(s). Note, the contractor is not responsible for the PDF file of a SARs title page and revision page(s).

Metrics:

See performance evaluation form.

Government Furnished Items:

Microsoft Word version of current approved SAR,

Other Information Needed for The Performance of Work:

There is no travel or Other Direct Charges (ODCs) associated with the performance of this subtask.

OSFA Pont-of-Contact (POC): David Barker

Performance Evaluation Form

TA: 2 (Facility) Subtask: 12		Imp. Fact.	Criteria					Points Awarded
			0	1	2	3	4	---
Schedule / Cost	Interim Schedule Dates	1	Failure to submit a deliverable	No submittal more than 15 days late.	No submittal more than 10 days late.	No submittal more than 5 days late.	No submittal more than 2 days late.	
	Subtask Closure Report	1	Greater than 30 days late	Greater than 10 days late	10 days late - 5 days early	Greater than 5 days early	Greater than 10 days early	
	Cost	1	Cost Variance greater than ± 15%	Cost Variance between ± 10% and ± 15%	Cost Variance between ± 5% and ± 10%	Cost Variance between ± 2% and ± 5%	Cost Variance less than ± 2%	
Technical Performance	Hazards Identified	4	Reviewers discovers at least 2 overlooked hazards	Reviewers discovers at least 1 overlooked hazards	Reviewers discovers no overlooked hazards	n/a	n/a	
	Risk Assessments	3	Reviewers discovers at least 2 incorrect risk assessments	Reviewers discovers at least 1 incorrect risk assessment	Reviewers discovers no incorrect risk assessment	n/a	n/a	
	Overall evaluation	4	below average	average	above average	excellent	superior	
Quality	Quality of SAR	2	Document requires major "re-work"	No more than 20 non-technical errors	No more than 5 non-technical errors	No more than 2 non-technical errors	No non-technical errors	
	Overall evaluation	2	below average	average	above average	excellent	superior	
							Total Points Awarded:	
							Total Possible Points:	58
							Grade Percentage:	

0 – Far Below Minimum Acceptable
1 – Below Minimum Acceptable
2 – Minimum Acceptable
3 – Exceeds Minimum Acceptable
4 – Far Exceeds Minimum Acceptable

TASK 3
RIQAL

Date:

To: **Mainthia Technologies Inc.**
17535 Rosbough Drive, Suite 200
Corporate Center of Middleburg Hts.
Cleveland, OH 44130

Subject: **NAS1-00077 – Task 3: Receipt Inspections and Quality Assurance Laboratory Services**

1. PURPOSE:

To establish the guidelines for failure analysis investigations and quality control testing to ensure that designated safety-critical items conform to applicable standards and specifications.

2. SCOPE:

The Receipt Inspections and Quality Assurance Laboratory (RIQAL) contractor performs failure analysis and quality control testing on safety critical products at Langley Research Center in accordance with this Task Order and RIQAL Work Instructions. It is estimated that approximately 2700 items will require testing over the period of performance.

The RIQAL contractor performs material verification/certification for all safety-critical items as defined by LAPD 4520.1, Langley Research Center (LaRC) Requirements for Safety-Critical Product Testing. The RIQAL contractor also performs failure analysis investigations on failed products to determine failure cause and recommend preventive/corrective action. The RIQAL contractor maintains records and reports to the Government results of tests performed. Additionally, the RIQAL contractor performs special tests in support of various projects as approved by the Office of Safety, Environment and Mission Assurance.

Under this Task Order, the RIQAL contractor shall perform mechanical testing, chemical analysis, microscopic examination, non-destructive and destructive testing, and electrical and electronic component inspections as required to verify individual shipment items. Minimum testing includes tensile testing on metal specimens and fasteners; hardness testing of a standard, superficial, and micro-hardness nature; x-ray fluorescence; micro-photography; metallographic analysis; fluorescent penetrate inspection; visual inspections; dimensional inspections; voltage testing; resistance testing; and mechanical, and assembly inspections. It is estimated that the RIQAL contractor may be required to travel up to a total of ten working days during the period of performance in support of NASA Langley RIQAL activities. Anticipated travel during this period of performance includes two two-day trips to attend Defense Logistics Agency bi-annual Quality Day Conference, Fort Belvoir, Virginia; one three-day trip the Johnson Space Center (JSC), Houston, Texas to evaluate the JSC quality assurance laboratory for potential improvement to the RIQAL; and one two-day trip to Goddard Space Flight Center (GSFC), Greenbelt, Maryland to evaluate the GSFC quality assurance laboratory for potential improvement to the RIQAL. The RIQAL shall conduct sampling, equipment operation, user calibration, verification testing, material release, material rejection in accordance with this Task

Order and RIQAL Work Instructions (Attachment A). The scope of this Task Order includes the potential for evaluation and proposed improvement of existing RIQAL Work Instructions, policies, and operation, to be identified via subsequent Task Order modification.

3. PERIOD OF PERFORMANCE: Date of award through April 12, 2001

4. GOVERNMENT-FURNISHED EQUIPMENT, SPACE AND FACILITIES

All Government-furnished laboratory equipment is identified in the contract for the performance of this Task Order. For equipment requiring calibration, the equipment listing identifies Category 1 equipment, which is equipment requiring calibration by NASA's Institutional Services Contractor or other contractor, and Category 2 equipment, which is equipment requiring calibration prior to use. The contractor is responsible for ensuring coordination of Category 1 equipment calibration via third-party contractor and the NASA Task Monitor, and calibrating Category 2 equipment as required in accordance with the RIQAL Work Instructions.

5. RIQAL WORK PROCESS

5.1. Product Receipt.

5.1.1 Logbook. Lab personnel shall maintain a logbook to record the receipt, test, and disposition status of the product to be tested. Products are logged in upon receipt and logged out upon test completion and product disposition determination, with all applicable paperwork signed and dated.

5.1.2 Stock Product Verification. Lab personnel shall verify the log-in of all stock items. Discrepancies shall be noted and forwarded to Receiving (Building 1206) for correction.

5.1.3 Non-Stock Item Test Products. Non-stock item test products are products received outside of the Office of Logistics Management (OLM) and Hangar stock, excluding special test items (see 5.1.1.4 below). All non-stock test items shall have an RI/QALab Work Order, Langley Form 248. The Work Order form identifies the date of the request, identifies special instructions from the requestor and applicable specifications, and the date tests are complete.

5.1.4 Special Test Products. Special test products are all products initiated via special request for failure analysis or other special circumstance. All special test items shall have an RI/QA Lab Work Order, Langley Form 248. The Work Order form identifies the date of the request, identifies special instructions from the requestor and applicable specifications, and the date tests are complete.

5.2 Response time. From the date of product receipt, the response time for conducting product testing is:

- 3 working days for "walk-in" (non-stock and special test item) customers.
- 5 working days for OLM stock products supplied by commercial vendor.
- 10 working days for OLM stock products supplied by the Defense Logistics Agency.
- Special tests may require additional response time. In this case, the RIQAL manager will establish a response time with the customer.

5.3 Test Numbers. Lab personnel shall assign each product to be tested a traceable test number, and record the appropriate test number in the logbook, on all tested items, and all applicable documentation.

5.3.1 OLM and Hangar stock items will be assigned a numerical test number. Numbers shall be identified and recorded in the logbook in the section designated "test numbers." Numbers are sequential, so that each subsequent test number shall be one more than the previously listed test number.

5.3.2 Each non-stock items shall be designated as "NSI." NSI tests are assigned a numerical test number preceded by a capital "NSI" followed by a dash (for example, NSI-1234). NSI test numbers shall be identified and recorded in the logbook in the section designated "NSI tests." Numbers are sequential, so that each subsequent test number shall be one more than the previously listed test number (for example, NSI-1234, NSI-1235, NSI-1236, etc).

5.3.3 All failure analyses or other special test requests are designated as "special test." Special tests are assigned a numerical test number preceded by a capital "S" followed by a dash (for example, S-1234). Special test numbers shall be identified and recorded in the logbook in the section designated "special tests." Numbers are sequential, so that each subsequent test number shall be one more than the previously listed test number (for example, S-1234, S-1235, S-1236, etc).

5.3.4 Tests that contain more than one lot number shall be assigned one alphabetical letter per lot, beginning with the letter "A." This letter shall follow the basic test number (for example, two different lots within the same test shall be marked as 1111A and 1111B). All packages and corresponding test documentation shall be marked accordingly.

5.4.5 RIQAL test numbers shall be applied via label to the individual item or unit package, as applicable. Loose items may be packaged as appropriate by lab personnel and likewise labeled with corresponding RIQAL test number.

5.4 Product Test Criteria. Lab personnel shall record all applicable specifications and test criteria on a Material Release Form (MRF).

5.4.1 If the item has an assigned National Stock Number (NSN), lab personnel shall obtain the technical item description using the LaRC network and the NASA Stock Management System (NSMS).

5.4.2 If the item does not have an assigned NSN, or the technical item description is not found within the NSMS, lab personnel shall identify specifications by reviewing available resources such as those identified by the requestor on the Work Order, Fedlog description, manufacturer specifications or other special instructions.

5.4.3 When no test specifications are identified for a product requested to be tested, the product shall be tested for its mechanical, tensile, and/or chemical properties, as appropriate.

5.4.4 Lab personnel shall forward to the RIQAL manager all identified discrepancies in test criteria (i.e., no approved procedures, item description, and specifications) for resolution.

5.5 Sampling. Sampling shall be in accordance with American National Standards Institute/American Society for Quality Control Z1.4, Sampling Procedures and Tables for Testing by Attribute.

5.6 Test and Results Documentation. Lab personnel shall perform applicable tests in accordance with RIQAL Work Instructions, and document and attach relevant RIQAL test results to the MRF.

5.7 Product Disposition.

5.7.1 Items meeting identified product test criteria shall be released or returned to requestor with appropriate documentation in accordance with RIQAL Work Instructions.

5.7.2 Items failing to meet product test criteria shall be retested in accordance with applicable test criteria specifications.

5.7.3 Items meeting the retest shall be released or returned to requestor with appropriate documentation in accordance with RIQAL Work Instructions.

5.7.4 Items failing retest shall be locked in secured storage. The RIQAL manager shall notify the requestor and disposition product as appropriate.

5.8 Report Documentation.

5.8.1 Within five working days of the last day of each month, the contractor shall submit monthly data reports containing Inspection Test Indicators; a Material Non-Conformance List by supplier; Average Processing Times; and Special Test Reports.

5.8.1.1 Inspection Test Indicators shall include the following data points:

- Number, Dollar Value, and Percent of items inspected
- Number, Dollar Value, and Percent of items defective
- Number, Dollar Value, and Percent of items inspected from commercial sources
- Number, Dollar Value, and Percent of items rejected from commercial sources
- Number, Dollar Value, and Percent of items inspected from Defense Logistics Agency
- Number, Dollar Value, and Percent of items rejected from Defense Logistics Agency
- Number of special tests performed

5.8.1.2 Material Non-Conformance List shall identify:

- RIQAL test number
- National Stock Number (if applicable)
- Item Description
- Supplier Source & Name (if commercial)
- Purchase Order Number (if applicable)
- Reason for Failure

5.8.1.3 Processing Time Average for each category of work received shall be identified (reference 5.2 for required response times). For each special test performed during the prior month requiring additional time as agreed to between the lab manager and the customer, the estimated response time and the actual response time shall be identified.

5.8.2 Special Test Reports shall be issued for actual special tests performed or as a result from a special request involving the RIQAL's evaluation, assessment, and/or recommendation. The contractor shall inform the Task Monitor upon receipt of special test activities and shall submit Special Test Reports to the Task Monitor within two work days of completion of special test activity. Special Test Reports shall identify:

- Customer/requestor
- Date of request
- Estimated and actual response time
- Date of report
- Background and reason for special request, if provided by customer
- Product tested
- Sample size
- Test(s) conducted
- Test results
- Final findings, assessments, evaluations, and/or recommendations

5.9 Customer Survey. The RIQAL contractor shall provide customers a Customer Survey (Attachment B). The purpose of the Customer Survey is to assess level of

satisfaction with RIQAL services. Results of the survey shall be incorporated into the RIQAL Performance Evaluation (Attachment C, see 6.0 below). The Customer Survey is to be completed by the customer and returned to the Office of Safety and Mission Assurance.

6.0 CONTRACTOR PERFORMANCE. The contractor's Schedule, Cost, Technical, and Quality performance under this Task Order shall be assessed in accordance with the Attachment C. Each performance factor has a defined criteria that ranges from 0 to 4 (0 being minimum acceptable and 4 exceeds minimum acceptable). An importance factor ranging from 1 to 3 showing the relative importance of the performance factor to one another has also been assigned (1 being less important than 4). The earned criteria are multiplied by the importance factor for each performance factor to establish the points awarded for each performance factor. The individual points awarded are then summed and divided by the total possible points for a final grade percentage for the task order. A final grade percentage is then calculated for the task order. The final grade is defined as follows:

0-24	Unsatisfactory
25-49	Below Average
50	Meets
51-74	Exceeds
75-100	Outstanding

7.0 Task Limitations:

Authorized Task Limitations:

Cost:
Fixed Fee:
Total CPFF:

Authorized Funding Limitations:

Cost:
Fixed Fee:
Total CPFF:

The above shall not be exceeded for this Task Order without prior written authorization of the Contracting Officer. Further, the Contractor is advised that the FAR Clause entitled, "Limitation of Funds" is in effect.

8.0 Task Monitor: Susan Shockcor

You are hereby requested to acknowledge receipt of this Task Order on the attached acknowledgement sheet and return one copy to the undersigned at NASA LaRC, Mail Stop 126, Hampton, VA 23681-0001.

No.: 01

Title: Removal of Representative sample from the parent piece for testing and evaluation.

1.0 PURPOSE

Operation of Buehler Abrasimatic Cut-off Saw.

2.0 SCOPE & APPLICABILITY

This procedure covers all required information for operation and maintenance of cut-off saw.

3.0 GENERAL

3.1 Cut-off wheel selection:

PN 5110 for RC 40 and above.
PN 5120 for RC 39 and below.

4.0 PROCEDURES and INSTRUCTIONS

4.1 Wheel Installation

4.1.1 Raise hood and insert arbor pin into one of the two holes at the right hand end of the wheel hub. Allow arbor pin to rest against one of the wheel guard support bars or the vise top in order to hold motor stationary.

4.1.2 Fit arbor wrench onto the wheel and loosen the bolt by turning it clockwise (arbor pin will hold motor shaft stationary).

4.1.3 Remove bolt and outer wheel flange. Replace the wing nut at the front of the wheel guard, open the wheel guard.

4.1.4 Make sure the faces of the two flanges are clean, then carefully fit the selected wheel onto the arbor of the fixed flange.

4.1.5 Close and refasten the wheel guard. Replace the outer flange and bolt.

4.1.6 Tighten the bolt (counter clockwise) with the arbor wrench using the arbor pin to prevent rotation of the motor.

4.1.7 Remove the arbor pin.

4.1.8 Spin the wheel by hand to confirm that it has been installed correctly.

4.2 Sample Fixturing

4.2.1 Release the clamping levers by pulling them towards the front of the cutter unit. Open vise completely.

4.1.1 Insert the sample, then push both clamping jaws firmly against the sample.

4.2.3 Using the moderate hand pressure, push the clamping levers towards the rear of the machine.

4.3 Clamping Procedure

*** Proper safety gloves must be worn when loading and unloading samples.**

4.3.1 Make sure that the cut-off wheel is of the correct grade and properly fit.

4.3.2 Confirm that the clamped sample is immovable. Close hood. (NOTE: Cutter will not operate unless hood is completely closed.)

4.3.3 Adjust air pressure to 60 PSI.

4.3.4 Adjust feed rate control to accommodate sample to be cut. (Ref. Feed Chart).

4.3.5 Depress rapid advance button to lower the wheel to within a few millimeters of the sample (When using a new wheel, depress button and allow coolant to soak in the wheel for a few seconds).
4.3.6 Press the auto-start button to begin cutting. When the cut is complete, the motor and pump will stop and wheel will return to the start position.
4.3.7 Unclamp and remove the cut sample.

5.0 Maintenance

*** Proper safety gloves must be worn when cleaning cutting area.**

5.1 Remove large fragments.
5.2 Clean all swarf from cutting area with a stiff brush.
5.3 Flush upper chamber using coolant tube.

No.: 02

Title: Surface preparation of test specimens for chemical or microscopic examination.

1.0 PURPOSE

Operation of preparation equipment.

2.0 SCOPE & APPLICABILITY

This procedure covers all required information for processing of specimens.

3.0 PROCEDURES and INSTRUCTIONS

3.1 Rough Grinding (Hand) *** If using Automet II powerhead, skip to step 3.2.***

3.1.1 Select proper sanding disc (Normal progression of sanding disc - 240, 320, 400, and 600).
3.1.2 Install selected disc onto grinding platen and secure with either snap ring or spray adhesive (sticky back paper may also be used).
3.1.3 Start grinder/polisher. Press power on and run controls.
3.1.4 Adjust speed by pressing either increase or decrease until desired speed appears in LED indicator.
3.1.5 To use water lubrication, lift and swing the water dispenser arm into the desired position. To start the flow of water, press water on control.
3.1.6 Adjust the water flow of the bowl flush jet with external water supply valve. Adjust the dispensing arm water flow using the knob located at the top left rear corner of the cabinet.
3.1.7 Once the water flow and wheel speed have been adjusted, proceed with rough grinding of sample.
3.1.8 Holding sample in right hand, place sample flat on grinding wheel (NOTE: Hold sample on wheel so that direction of wheel is away from body). Remove

sample from paper and examine after 10-15 seconds, if all scratches are uniform in depth and direction, stop wheel and change paper to next grit. Rotate sample 90 ° from previous position and repeat above steps. If preparing sample for EDAX, 240 and 320 operations will be sufficient. If preparing sample for microscope evaluation, continue through until operation is complete on 600 grit.

3.2 Rough Grinding (Powerhead)

3.2.1 Select proper specimen holder, place specimen holder in mounting press and secure with clamp.
3.2.2 Place samples in holder and secure with attached set screws.
3.2.3 Remove holder from press and examine specimens to ensure they are flat and secure.
3.2.4 Install specimen holder into powerhead.
3.2.4.1 Turn chuck (on powerhead).
3.2.4.2 Insert specimen holder so that the pins of the holder align with the grooves in the chuck.
3.2.4.3 Release chuck.
3.2.4.4 Position powerhead so that specimen holder overlaps the edge of platen but will not interfere with splash ring.
4.1.6.1 Lock powerhead in place using "L" handle located on powerhead.

3.2.4.6 Test positioning by partially lowering specimen holder. If interference appears imminent, press stop button on powerhead. Reposition in accordance with above instructions and repeat until proper position is established.
3.2.5 Press control on button on powerhead front panel (NOTE: grinder/polisher power must be on in order for powerhead to operate).
3.2.6 Select following parameters:

Force (See Chart) -	This can be varied while grinding is underway.
Time (See Chart) -	
Direction -	Must be opposite of grinder rotation.
Fluids -	Select water for grinding.

3.2.7 Push two start buttons and cycle will begin.
3.2.8 Once cycle is complete, remove specimen holder and examine to ensure scratches are of the same size. If not repeat cycle. If scratches are uniform, change paper and repeat until desired surface finish is achieved.
3.2.9 Place specimen into ultrasonic and clean.

No.: 03

Title: Mounting of test specimens for chemical and metallographic examination.

1.0 PURPOSE

Operation of encapsulating equipment.

2.0 SCOPE & APPLICABILITY

This procedure covers all required information for mounting of specimens.

3.0 PROCEDURE and INSTRUCTIONS

3.1 Pre-heat of mounting cylinder
- 3.1.1 Remove mold closure from top of press.
- 3.1.2 Place heater coil on cylinder and pre-heat for five (5) minutes.

3.2 Molding Procedures
- 3.2.1 Flip ram control to the right, raising ram to the top of the cylinder.
- 3.2.2 Place specimen on the center of the ram face.
- 3.2.3 Move ram control to the left, lowering the ram.
- 3.2.4 Look down ram to ensure sample is still in the center of the ram (if not redo steps 3.2.1 thru 3.2.4.
- 3.2.5 Add pre-measured amount of molding powder into top of ram.
- 3.2.6 Place mold closure on top of ram closure and turn clockwise until secure.
- 3.2.7 Set pressure and time (See Chart).
- 3.2.8 Move ram control to the right, raising ram.
- 3.2.9 Check air pressure and adjust if necessary.
- 3.2.10 When time has expired, remove heater coil and replace with cooling coil, set timer for five (5) minutes.
- 3.2.11 After time expires, move ram control to the left, releasing pressure.
- 3.2.12 Remove mold closure (counter clockwise).
- 3.2.13 Move ram control to the right, raising ram
- 3.2.14 Remove mold and vibropeen ID number to side of mold.

No.: 04

Title: Data Retrieval

1.0 PURPOSE

To establish a procedure for the retrieval of test data from P.C.

2.0 SCOPE & APPLICABILITY

This procedure will provide instructions for retrieval of test data from database files.

3.0 PROCEDURES and INSTRUCTIONS

3.1 File Selection
- 3.1.1 Using mouse, select Excel 4.0 program
- 3.1.2 Open File.
- 3.1.3 Use mouse to scroll through database to select desired file.
- 3.1.4 Using mouse, select desired file and execute open command.

3.2 Updating File
- 3.2.1 Replace data as required.
- 3.2.2 Select "Save As" if file is to be new.
- 3.2.3 Select "Save" if name is to remain the same.

3.3 Printing Data
- 3.3.1 Select "Print".
- 3.3.2 Make necessary adjustments (i.e. # of pages, full document, # of copies, etc.).

3.3.3 Select "Print".

3.4 Closing File

3.4.1 Under file, select "Close".

3.5 Exiting File

3.5.1 Exit back to Windows.

No.: 05

Title: Hardness Inspection of Materials

1.0 PURPOSE

Operation of New Age Hardness Tester.

2.0 SCOPE & APPLICABILITY

This procedure covers operation and selection of parameters for hardness testers.

3.0 PROCEDURE and INSTRUCTIONS

3.1 Samples below 1/4" thickness

3.1.1 All mounted samples will be examined on the following scales:

Carbon Steel	15N
Alloy Steel	15N
Aluminum	15T

3.1.2 Set indicator switch for diamond if checking steel and ball for aluminum.

3.1.3 Select superficial scale on both switch on front and on lever on right side of tester.

3.1.4 Install appropriate indentor for material to be inspected.

3.1.5 Use appropriate calibration block for scale to be used.

3.1.6 Process calibration block to verify readings as marked on calibration block and reading in calibration log.

3.1.7 Process the test sample using the following steps.

3.1.7.1 Place sample on load platform.

3.1.7.2 Raise sample platform by turning clockwise until green light appears in circle on face of tester.

3.1.7.3 Release handle at bottom of tester by turning clockwise approximately 45°.

3.1.7.4 When green light appears on display, return handle to upright position.

3.2 Sample larger than 1/4"

3.2.1 Unmounted samples shall be examined on the following scales:

Carbon Steel	RC
Alloy Steel	RC
Stainless Steel	RC
Aluminum	RB

3.2.2 Set indicator switch to diamond for steel and ball for aluminum.

3.2.3 Adjust load to 150 Kg for steels and 100Kg for aluminum.

3.2.4 Install appropriate indentor.

3.2.5 Select regular on both, switch on front, and lever on right side of tester.

3.2.6 Use appropriate calibration block to verify readings as marked on calibration block.

3.2.7 Process calibration block to verify readings as marked on calibration block.

3.2.8 Process test sample using the following steps:
- 3.2.8.1 Place sample on load platform.
- 3.2.8.2 Raise sample platform by turning clockwise until green light appears in circle on face of tester.
- 3.2.8.3 Release handle at bottom of tester by turning clockwise approximately 45°.
- 3.2.8.4 When green light appears on display, return handle to upright position.
- 3.2.8.5 Record reading from display and repeat step 7 a minimum of three (3) times per test sample.

No.: 06

Title: Surface preparation of test samples for chemical or hardness testing.

1.0 PURPOSE

Sample Preparation

2.0 SCOPE & APPLICABILITY

This procedure covers the steps required for preparing samples for hardness testing.

3.0 PROCEDURE and INSTRUCTIONS

3.1 Sample Preparation
- 3.1.1 Turn on both accessory and belt switches located on front of grinder.
- 3.1.2 Adjust water flow so belt is evenly coated (failure to do this may cause false hardness readings).
- 3.1.3 Hold sample on belt with existing cut or grind marks at a 45° angle to rotating belt. This will be done until surface is smooth and free of burrs.
- 3.1.4 Turn off both switches and rinse sample prior to further processing.

No.: 07

Title: Material Release

1.0 PURPOSE

Forms and procedures.

2.0 SCOPE & APPLICABILITY

This procedure covers release of material to stock.

3.0 PROCEDURE and INSTRUCTIONS

3.1 Once all testing is completed per applicable test procedure, results will be reviewed for acceptance.
3.2 Material release form (Ref. pg. 2) will be filled out with appropriate information.
3.3 Lab Manager will review results and sign off on release form.
3.4 Release form will be returned back to originator for processing.

3.8 Original plus any acquired test data will be filed in Lab for a minimum of two (2) years.

No.: 08

Title: Material Rejection

1.0 PURPOSE

Material Rejection.

2.0 SCOPE & APPLICABILITY

This procedure covers rejection of material.

3.0 PROCEDURE and INSTRUCTIONS

3.1 Once testing is completed all applicable data will be reviewed. Additional testing will be performed as necessary and/or as instructed by the Lab Supervisor.

3.2 Any non-conformity will be retested per the applicable specification(s). Dimensional non-conformities on threaded fasteners will be sent to the Material Review Board (MRB) by the Lab Supervisor.

3.3 In addition to retesting the non-conforming item, a minimum of one additional sample shall be tested to ensure accuracy of test data.

3.4 If material passes retest, material will be released in accordance with procedure number 07.

3.5 If the material still does not meet the applicable specification(s), it shall be deemed rejectable and marked accordingly.

3.6 A copy of the packaging information (purchase order, packaging label, etc.) shall be attached to the hard copy of the Material Release Form of any Government Supplied Material that fails inspection.

3.6.1 All tests shall be annotated with the following statement:
This lot of material contains items which fail to conform to the specification(s) that it was procured under. It is therefore unsuitable for use at the Langley Research Center and should be returned to the supplier.

3.7 Hard copies of test results shall be filed in the Lab for a minimum of two (2) years.

No.: 09

Title: Aluminum Verification

1.0 PURPOSE

Required information for material verification.

2.0 SCOPE & APPLICABILITY

This procedure will cover equipment and tests required to verify Aluminum Plates and Shapes.

3.0 PROCEDURE and INSTRUCTIONS

3.1 Equipment Required:

Pneumet I Mounting Press*
Cut-Off Saw*
Duomet II
Ecomet III*
Ultramet V*
EDAX
Hardness Tester

* Required for samples less than .250" in thickness.

3.2 Verify NSN # of material to be tested by referencing NASA Cat Scan. Check material against respective description and test in accordance with applicable specification(s) and procedures.

3.3 Samples less than .250" thick.
- 3.3.1 Section sample IAW procedure number 01.
- 3.3.2 Mount sample IAW procedure number 03.
- 3.3.3 Grind and polish samples IAW 02 (samples need not go through final polish)
- 3.3.4 Process sample on EDAX IAW procedure number 32.
- 3.3.5 Verify EDAX results using ASM reference book.

3.4 Samples greater than .250" in thickness.
- 3.4.1 Grind samples on Duomet IAW procedure number 06.
- 3.4.2 Process sample on EDAX IAW procedure number 32.
- 3.4.3 Verify EDAX results using ASM reference book.
- 3.4.4 Process sample on hardness tester IAW procedure number 05.
- 3.4.5 Verify temper using ASM reference book.

3.5 Material Release
- 3.5.1 Once testing is complete and results are verified, release material IAW procedure number 07. If material is to be rejected, reference procedure number 08.

No.: 10

Title: Verification of Aluminum Tubing

1.0 PURPOSE

Required information for material verification.

2.0 SCOPE & APPLICABILITY

This procedure will cover equipment and tests required to verify Aluminum Tubing.

3.0 PROCEDURE and INSTRUCTIONS

3.1 Equipment Required:

Duomet II
EDAX
Hardness Tester

3.2 Verify NSN # of material to be tested by referencing NASA Cat Scan. Check material against respective description and test in accordance with applicable specifications and procedures.

3.3 Tube & Pipe
- 3.3.1 Samples will be flattened prior to grinding.
- 3.3.2 Process on Duomet II IAW procedure number 06.
- 3.3.3 Process sample on EDAX IAW procedure number 32.
- 3.3.4 Verify EDAX results using ASM reference book.
- 3.3.5 Process sample on hardness tester IAW procedure number 05.
- 3.3.6 Verify temper using ASM reference book.

3.4 Material Release
- 3.4.1 Once testing is complete and results are verified, release material IAW procedure number 07. If material is to be rejected, reference procedure number 08.

No.: 11

Title: Verification of Alloy Steel Tube & Pipe

1.0 PURPOSE

Required steps for material verification.

2.0 SCOPE & APPLICABILITY

This procedure will cover equipment and tests required to verify Alloy Steel Tube & Pipe.

3.0 PROCEDURE and INSTRUCTIONS

3.1 Equipment Required:

Pneumet I Mounting Press*
Cut-Off Saw*
Duomet II
Ecomet III*
Ultramet V*
EDAX
Microscope
Micrometer

* Required for samples less than .250" in thickness.

3.2 Verify NSN # of material to be tested by referencing NASA Cat Scan. Check material against respective description and test in accordance with applicable specifications and procedures.

3.3 Tube & Pipe
- 3.3.1 Tube & Pipe will be dimensionally inspected for min. readings as referenced by P.O.
- 3.3.2 Seamless pipe will be sectioned and prepared for metallographic examination IAW procedure number 01, procedure number 02 and procedure number 03.
- 3.3.3 A second sample will be processed on Duomet IAW procedure number 06.
- 3.3.4 Process sample on EDAX IAW procedure number 32.
- 3.3.5 Verify EDAX results using ASM reference book.

3.4 Material Release
- 3.4.1 Once testing is complete and results are verified, release material IAW procedure number 07. If material is to be rejected, reference procedure number 08.

No.: 12

Title: Verification of Alloy Steel Plates & Shapes

1.0 PURPOSE

Required information for material verification.

2.0 SCOPE & APPLICABILITY

This procedure will cover equipment and tests required to verify Alloy Steel Plates & Shapes.

3.0 PROCEDURE and INSTRUCTIONS

3.1 Equipment Required:

Pneumet I Mounting Press*
Cut-Off Saw*
Duomet II
Ecomet III*
Ultramet V*
EDAX

* Required for samples less than .250" in thickness.

3.2 Verify NSN # of material to be tested by referencing NASA Cat Scan. Check material against respective description and test in accordance with applicable specifications and procedures.

3.3 Samples less than .250" in thickness.
- 3.3.1 Section sample IAW procedure number 01.
- 3.3.2 Mount sample IAW procedure number 03.
- 3.3.3 Grind and polish samples IAW procedure number 02 (sample need not go through final polish).
- 3.3.4 Process sample on EDAX IAW procedure number 32.
- 3.3.5 Verify EDAX results using ASM reference book.

3.4 Samples greater than .250" in thickness.
- 3.4.1 Grind samples on Duomet IAW procedure number 06.
- 3.4.2 Process samples on EDAX IAW procedure number 32.
- 3.4.3 Verify EDAX results using ASM reference book.

3.5 Material Release
- 3.8.6 Once testing is complete and results are verified, release material IAW procedure number 07. If material is to be rejected, reference procedure number 08.

No.: 13

Title: Verification of Stainless Steel Plates & Shapes

1.0 PURPOSE

Required information for material verification.

2.0 SCOPE & APPLICABILITY

This procedure will cover equipment and tests required to verify Stainless Steel Plates & Shapes.

3.0 PROCEDURE and INSTRUCTIONS

3.1 Equipment Required:

Pneumet I Mounting Press*
Cut-Off Saw*
Duomet II
Ecomet III*
Ultramet V*
EDAX

* Required for samples less than .250" in thickness.

3.2 Verify NSN # of material to be tested by referencing NASA Cat Scan. Check material against respective description and test in accordance with applicable specifications and procedures.

3.3 Samples less than .250" in thickness.
- 3.3.1 Section sample IAW procedure number 01.
- 3.3.2 Mount sample IAW procedure number 03.
- 3.3.3 Grind and polish samples IAW procedure number 02 (sample need not go through final polish).
- 3.3.4 Process sample on EDAX IAW procedure number 32.
- 3.3.5 Verify EDAX results using ASM reference book.

3.4 Samples greater than .250" in thickness.
- 3.4.1 Grind samples on Duomet IAW procedure number 06.
- 3.4.2 Process samples on EDAX IAW procedure number 32.
- 3.4.3 Verify EDAX results using ASM reference book.

3.5 Material Release
- 3.5.1 Once testing is complete and results are verified, release material IAW procedure number 08. If material is to be rejected, reference procedure number 07.

No.: 14

Title: Verification of Stainless Steel Pipe & Tube

1.0 PURPOSE

Required information for material verification.

2.0 SCOPE & APPLICABILITY

This procedure will cover equipment and tests required to verify Stainless Steel Pipe & Tube.

3.0 PROCEDURE and INSTRUCTIONS

3.1 Equipment Required:

Pneumet I Mounting Press*
Cut-Off Saw*
Duomet II
Ecomet III*
Ultramet V*
EDAX
Microscope
Micrometer
Hydraulic Flaring Press

* Required for samples less than .250" in thickness.

3.2 Verify NSN # of material to be tested by referencing NASA Cat Scan. Check material against respective description and test in accordance with applicable specifications and procedures.

3.3 Tube & Pipe

3.3.1 Tube & Pipe will be dimensionally inspected for min. readings as referenced by the P.O. or Cat Scan

3.3.2 Seamless pipe will be sectioned and prepared for metallographic examination IAW procedure number 01, procedure number 02 and procedure number 03.

3.3.3 A second sample will be processed on Duomet IAW procedure number 06.

3.3.4 Process sample on EDAX IAW procedure number 32.

3.3.5 Verify EDAX results using ASM reference book.

3.3.6 Flare tubing per applicable specification.

3.4 Material Release

3.4.1 Once testing is complete and results are verified, release material IAW procedure number 07. If material is to be rejected, reference procedure number 08.

No.: 15

Title: Verification of Carbon Steel Pipe

1.0 PURPOSE

Required information for material verification.

2.0 SCOPE & APPLICABILITY

This procedure will cover equipment and tests required to verify Carbon Steel Pipe.

3.0 PROCEDURE and INSTRUCTIONS

3.1 Equipment Required:

EDAX
Microscope
Hardness Tester

3.2 Verify NSN # of material to be tested by NASA Cat Scan. Check material against respective description and test in accordance with applicable specifications and procedures.

3.3 Tube

3.3.1 Samples will be dimensionally inspected to attributes listed in appropriate specification.
3.3.2 Sample will be processed on Duomet IAW procedure number 06.
3.3.3 Process Sample on EDAX IAW procedure number 45.
3.3.4 Verify EDAX results using ASM reference book.
3.3.5 Process samples on hardness tester IAW procedure number 05
3.3.6 Verify results using ASM reference book.

3.4 Material Release
3.4.1 Once testing is complete and results are verified, release material IAW procedure number 07. If material is to be rejected, reference procedure number 08.

No.: 16

Title: Verification of Carbon Steel Drill Rod

1.0 PURPOSE

Required information for material verification.

2.0 SCOPE & APPLICABILITY

This procedure will cover equipment and tests required to verify Carbon Steel Drill Rod.

3.0 PROCEDURE and INSTRUCTIONS

The RIQAL is unable to perform this inspection at this time. This material shall be forwarded to NASA QA Lab until required equipment is obtained.

(Instructions for operating carbon analyzer)

3.1 Prepare samples. Samples should weigh about 1 gram.
3.2 If analyzer power is OFF, switch power ON and allow a half-hour period before using the analyzer.
3.3 Turn ON the Furnace Power.
3.4 Turn ON the Oxygen Tank Regulator (40 psig +/- 10%). The air pressure should be 40 psig +/- 10% also.
3.5 Press GAS key to start oxygen flow. Allow two (2) minutes of purge.
3.6 Determine and enter a carbon blank value if performing low carbon analysis. Refer to SET SYSTEM BLANK PROCEDURE.
NOTE: Bake off crucibles used for low carbon (<.01) analysis in a muffle furnace for 20 minutes @ 1200-1350 deg. C or 2192-2462 deg. F.
3.7 Enter all calibration and sample weights before running CALIBRATION PROCEDURE or samples.
3.7.1 Enter ID code for each sample, if one is desired. To enter the ID code, push the INDENT key. If the letter prefix is to be changed, repeatedly push the key until the desired letter (A,B,C, or D) appears in the message center. Then push the number keys. When the correct ID code is displayed, push the ENTER key.
NOTE: The ID code consists of a letter prefix, (A,B,C,or D) followed by eight numbers. The last two (2) digits sequence upward as each sample is entered. The first six digits will not sequence or change except when the operator edits them.
3.7.2 The first four samples will be for the calibration of the analyzer; three for setting up the calibration curve and the fourth to check accuracy of the curve.

3.7.3 Place a crucible onto the balance pan. After the balance has stabilized press the ENTER key.

3.7.4 Put a sample into the crucible, wait for the balance to stabilize, then press the ENTER key.

3.7.5 Put that crucible into holding tray and put a new crucible onto the balance pan and press TARE.

3.7.6 Put a sample into the crucible and press ENTER.

3.7.7 Continue this procedure until all standards and samples have been weighed.

3.7.8 Put accelerator (1 scoop) into each crucible weighed.

3.8 Analyze the three (3) standards.

3.8.1 Place the crucible with the first standard onto the pedestal, then press the pedestal switch. The pedestal block will close, positioning the crucible in the furnace.

3.8.2 Analysis will begin.

3.8.3 When the analysis is complete the percentage of carbon in the sample will be displayed in the large display window on the front panel.

3.8.4 After the burn, wait for the BEEP before lowering the pedestal. Continue steps 3.8.1 thru 3.8.4 for all the standards.

3.8.5 When all standards have been run press SYSTEM UPDATE, then press the 1 key to quick access the CALIBRATE SYSTEM PROCEDURE. Press the YES key in response to the procedure entry message. The message center will display the first subroutine of this procedure.

STANDARD SAMPLE Y/N

3.8.7 Push the YES key. The message center will display:

3.8.8 SELECT FROM LAST 05 RESULTS

3.8.7 Select the size of the calibration stack by entering the number of standard analysis performed for calibration (1-50). The message center will display:

SYSTEM CALIBRATION
CARBON STANDARD = 01.090 (Example Only)

3.8.8 Enter the carbon content of the standard sample by pressing the appropriate number keys, then press the ENTER key. The message center will present the answers in the stack individually for inclusion in the calibration calculation:

INCLUDE ANSWER Y/N
ID CODE - CARBON
A00000005 01.110 (Example Only)

3.8.9 Press the YES key if this result is to be used to calibrate, or the NO key to exclude this result from the calibration calculation. When either key is pushed, the message center will display the next results from the answer stack:

INCLUDE ANSWER Y/N
A00000005 01.110 Y*
A00000005 01.108 N (Example Only)

NOTE: After all results have been displayed the calibration stack will "roll over" and present them again so they can be rechecked. Press the ENTER key to terminate the review.

3.8.10 Respond to each result as it is presented until all desired results have been selected, then press the ENTER key. The old calibration value will be printed, the new value will be calculated and printed. The message center will display:

OLD CALIB = .9113
NEW CALIB = .8977
REVIEW ANSWERS Y/N (Example Only)

NOTE: If the new calibration is outside the range .5000-2.0000 the alarm LED will light and the calibration will be aborted. The new calibration displayed will be the same as the old one. Entry of the

standard value with the decimal point in the wrong place is a common cause for this alarm.

3.8.11 Press the YES key to print the calibration stack corrected for the new calibration factor. The message center will display:
CALIBRATION COMPLETE (or ABORTED)
NEW CALIB = 0.8977
EXIT .....? Y/N (Example Only)

3.8.12 Press the YES key to return the system to the idle loop.

3.9 Run the fourth calibration standard to check the accuracy of the new calibration curve. Then run the remainder of the samples as listed in steps 3.8.1 thru 3.8.4.

3.10 When the analysis is complete the percentage of carbon in the sample will be displayed in the large display window on the front panel.

3.11 Do not turn the gas OFF until all analysis are complete.

3.12 Leave analyzer power ON all the time.

3.13 Shut OFF furnace power.

3.14 Leave the flow control setting where it is.

3.15 Press the GAS switch to turn OFF the oxygen. The GAS LED will go dark.

3.16 Turn OFF the gas at the tank valve. An "02 PRESS" alarm will occur. Disregard it.

No.: 17

Title: Verification of Alloy Stainless Steel Socket Head Cap Screws

1.0 PURPOSE

Required information for material verification.

2.0 SCOPE & APPLICABILITY

This procedure will cover equipment and tests required to verify Alloy Steel Socket Head Cap Screw.

3.0 PROCEDURE and INSTRUCTIONS

Equipment Required:

Pneumet I Mounting Press	EDAX
Cut-Off Saw	Apeiron LTMS
Ecomet III	Thread Gage
Ultramet V	Micrometer
Tensile Tester	Hardness Tester

3.1 Verify NSN # of material to be tested by referencing NSMS. Check material against respective description and test in accordance with applicable specification and procedures.

3.2 Screws too small to tensile test will be processed as follows:

3.2.1 One sample per 100 fasteners will be tested.

3.2.2 Section fasteners IAW procedure number 01.

3.2.3 Mount sample IAW procedure number 03.

3.2.4 Grind and Polish samples IAW procedure number 02 (samples need not go through final polish).

3.2.5 Process sample on hardness tester IAW procedure number 05.

3.2.6 Verify temper using ASM reference book.

3.3 Tensile Testing
- 3.3.1 Process fasteners to failure using Tinius Olsen Tensile Tester. IAW procedure number 29.

3.4 Dimensional Testing
- 3.4.1 Fasteners with .138" to 10" diameter and 4 to 56 threads per inch will be tested in accordance with procedure number 34 (LTMS).
- 3.4.2 Applicable fasteners that fall outside of the above range will be checked manually with a thread gage and micrometer.

3.5 Chemical Analysis
- 3.5.1 Stainless Steel Socket Head Cap Screws will be tested & checked for applicable chemical properties in accordance with procedure number 32.

3.6 Material Release
- 3.6.1 Once testing is complete and results are verified, release material IAW procedure number 07. If material is to be rejected, reference procedure number 08.
- 3.6.2 Mark all material packages with applicable RI/QA test number before release to stock.

No.: 18

Title: Verification of Alloy Steel Counter Sunk Screws

1.0 PURPOSE

Required information for material verification.

2.0 SCOPE & APPLICABILITY

This procedure will cover equipment and tests required to verify Alloy Steel Counter Sunk Screws.

3.0 PROCEDURE and INSTRUCTIONS

Equipment Required:

Pneumet I Mounting Press
Cut-Off Saw
Ecomet III
Ultramet V
Tensile Tester
Hardness Tester

3.1 Verify NSN # of material to be tested by referencing NSMS. Check material against respective description and test in accordance with applicable specification and procedures.

3.2 Screws too small to tensile test will be processed as follows:
- 3.2.1 One sample per 100 fasteners will be tested.
- 3.2.2 Section fasteners IAW procedure number 01.
- 3.2.3 Mount sample IAW procedure number 03.
- 3.2.4 Grind and Polish samples IAW procedure number 02 (samples need not go through final polish).
- 3.2.5 Process sample on hardness tester IAW procedure number 05.
- 3.2.6 Verify temper using ASM reference book.

3.3 Tensile Testing

3.3.1 Process fasteners to failure using Tinius Olsen Tensile Tester. IAW procedure number 29.

3.4 Material Release

3.4.1 Once testing is complete and results are verified, release material IAW procedure number 07. If material is to be rejected, reference procedure number 08.

3.4.2 Mark all material packages with applicable RI/QA test number before release to stock.

No.: 19

Title: Verification of Alloy Steel Set Screws

1.0 PURPOSE

Required information for material verification.

2.0 SCOPE & APPLICABILITY

This procedure will cover equipment and tests required to verify Alloy Steel Counter Sunk Screws.

3.0 PROCEDURE and INSTRUCTIONS

Equipment Required:

Pneumet I Mounting Press
Cut-Off Saw
Ecomet III
Ultramet V
Tensile Tester
Hardness Tester

3.1 Verify NSN # of material to be tested by referencing NSMS. Check material against respective description and test in accordance with applicable specification and procedures.

3.2 Screws too small to tensile test will be processed as follows:

3.2.1 One sample per 100 fasteners will be tested.

3.2.2 Section fasteners IAW procedure number 01.

3.2.3 Mount sample IAW procedure number 03.

3.2.4 Grind and Polish samples IAW procedure number 02 (samples need not go through final polish).

3.2.5 Process sample on hardness tester IAW procedure number 05.

3.2.6 Verify temper using ASM reference book.

3.3 Tensile Testing

3.3.1 Process fasteners to failure using Tinius Olsen Tensile Tester. IAW procedure number 29.

3.4 Material Release

3.4.1 Once testing is complete and results are verified, release material IAW procedure number 07. If material is to be rejected, reference procedure number 08.

3.4.2 Mark all material packages with applicable RI/QA test number before release to stock.

4.6 Select "Single" in the force area. * This will be flashing for the original set-up only. (Single is selected because the sample holder is a non-locking sample holder. When the samples are locked in to place then center force is used.)

4.7 Select the head "down" button and hold until sample holder is lowered. * This will be flashing for the original set-up only.

4.8 Turn force off until sample are placed into the holder.

4.9 Select the direction the wheel will rotate. Start with contra, diamond should be complimentary ending with contra.

4.10 Set the speed. * This should depend on grit being used.

4.11 Set the time. * This should depend on grit being used

4.12 Turn water on or off. Turn water on for grit paper and last minute of .01 micron.

4.13 Swing head to desired position over desired plate.

4.14 Lower head down using the button and place specimens in holes located on the sample holder.

4.15 Lower the individual pressure fingers. * This is optional because the fingers automatically come down when the cycle is started.

4.16 If water is being used in the cycle, turn water feed to the desired position over the grinding disc.

4.17 Press "Start" under cycle area, and wait for cycle to finish.

4.18 Press "Raise" for the sample holder; remove sample to the ultrasonic cleaner.

4.19 Repeats steps 4.1, 4.2,4.6 and 4.8 - 4.17. Repeat steps until polish is finished.

4.20 When finished turn off machine by pushing in button with the key and turning clockwise.

No.: 43

Title: Recall of Test Templates in Excel

1.0 PURPOSE

Information how to pull up templates in Excel.

2.0 SCOPE & APPLICABILITY

This procedure will cover how to find templates in Excel.

3.0 GENERAL

(* This requires some knowledge of Excel) Since the installation of a computer in the Electronics Lab, many of the test sheets have been installed in the computer. The templates are located in the D: drive under "RIQALTstsht". However, new items seem to come in monthly, when no templates are available then 1 of 2 actions can be taken.

1) If time is not available under the Test Documents is a "Form 16" which is a generic form for testing.

2) If time is available then a test document can be custom designed and used.

*Should the computer go down then test sheets are still on file to be filled out manually. This includes a form 16.

No.: 44

RIQAL Work Instructions
NASA Langley Research Center
Attachment A

Title: Operation of Fluke PM 6306 RCL Meter

1.0 PURPOSE

Required information for RCL Meter operation.

2.0 SCOPE & APPLICABILITY

This procedure will cover operations involved with the Fluke PM 6306 RCL Meter.

3.0 GENERAL

The Fluke RCL Meter allows the testing of resistors, capacitors and inductors. It will also inform the technician how far out of tolerance the part being tested is. Some parts may require the Fluke 8840A DMM to be used. The RCL meter does not show enough decimal points for the higher value sensitive components.

4.0 PROCEDURE and INSTRUCTION

4.1 Turn on machine allow to warm up for at least 1/2 hour for better accuracy.
4.2 Place component in test clips. Adjust clips if needed.
4.3 Press "Auto" button so machine can verify component.
4.4 Press "Deviation Set Ref." button and dial labeled "-", "+" dial in the actual value of the components and press "Deviation Set Ref." again.
4.5 Begin recording values for tests.

FIG.

1.0 **Purpose:**
Daily calibration of EDAX

2.0 **Scope & Applicability:**
This procedure covers the calibration procedure of the EDAX.

3.0 **Calibration Procedures:**

5 Set up EDAX by placing 2024 calibration plate over x-ray beam orifice.

6 Set μA setting to 500Kv to 20. Turn on EDAX.

3.3 Select DxRF from Program Manager (FIG. 1)

FIG. 2

5 On menu under DxRF select the button with the caliper (FIG. 2).

3.5 A window should appear labeled "Calibration", press the button labeled "Start" (FIG. 3). Press the "Start" button and wait for a window with a "Calibration Complete" message. (FIG.4) This may take a few minutes.

FIG. 3

4 Press the "OK" button and click the mouse in any blank spot in the "Calibration" window. Now press the "ALT" and "Print Screen" buttons simultaneously .

3.7 Go back to "Program Manager" and open the "Microsoft Word" program (FIG. 5)

4 Open the "EDIT" file and press "Paste". Then go to the "Insert" file and press "Date and Time" and choose any entry with date and time. Then print the page.

3.9 Make sure the page has printed correctly and then close the "Word" program.
(There is an example labeled as FIG. 6 *at the end of this procedure.)*

FIG. 4

Prepared by _____

Approved by _____

No.: 46

1.0 Purpose:
Test of Electrostatic Discharge (ESD) Control Test Area in electronics lab.

2.0 Scope & Applicability:
This procedure covers the testing of the ESD control test area using NAS5300.4 (3L).

3.0 General:
This procedure covers all ESD control equipment testing to assure all ESD equipment is operating properly to avoid electrostatic discharge. This procedure employs sections 401-5A, and 401-3B of NAS 3500.4 (3L) to test the wrist strap and worksurface.

4.0 Test Procedures for Wrist Strap:

4.1 The wrist strap must be tested before each use.
4.2 Take the wrist strap and place it around the wrist. Be sure the strap is snug against the wrist.
4.3 Take the alligator clip, and place it on the test plug on the 3M 745 Wrist trap tester.
4.4 Press the plate in the center and wait for a reading.
4.5 If a green light is lit continue with test.
4.6 If a red light is lit, try to snug the strap to the wrist. Repeat 4.4.
4.7 If a green light is present go to 4.5.
4.8 If a red light is still present apply a skin crème around the wrist and retest. If a red light is still present discard wriststrap.

5.0 Test Procedures for Work Surface Resistivity:

5.1 The work surface resistivity and ground must be checked monthly as per NAS 3500.4 (3L).
5.2 Work surface resistivity must be checked using the ACL model #475 Portable Surface Resistivity Meter. Be sure the meter is set to "Ohms/Square" setting.
5.3 Turn machine on and place it face up on the surface.
5.4 The resistivity should fall within a 1MΩ and 10GΩ reading.
5.5 If the reading is correct continue, if it failed clean the surface with a mild detergent and retest.

6.0 Test Procedures for Work Surface Ground:

6.1 Test the ground by using a multimeter connected to the ground strap and the ground termination.
6.2 Take a reading. If the reading shows no ohms or a very low reading, continue.
If a high reading exists inspect the grounding wire and the terminations. If any part appears defective discard and replace the part.

RIQAL Work Instructions
NASA Langley Research Center
Attachment A

TABLE OF CONTENTS

3.4 A warning screen will then appear, this warning has been placed in the program to remind the operator to use the 10X lens so no damage to the indentor will be done.

3.5 Turn on the Shimadzu Microhardness Tester, wait for the "set zero and push clear" message to appear on the LCD screen on the tester, push clear. A "select function" screen will appear, press set and the number "5", set the load to the appropriate load needed to properly perform the test. (Usually 200 grams is adequate). Be sure the time is set on 15 seconds and press enter.

3.6 Focus the sample on the screen.

3.7 Move the indentor over the sample and press "Start" on the tester. Wait for a beep then turn the 10X lens back over the sample.

3.8 Take arrow of mouse and click on diamond points, place the arrow on the tip of the point. It there is trouble placing lines use the "Z2" button to zoom in on the diamond. The screen will show a full picture. Use the letter buttons at the bottom:

T = Top Line
L = Left Line
B = Bottom Line
R = Right Line

Use the arrow keys on the keyboard to adjust the line to the proper placement. After the test is completed press "accept" button.

3.9 After testing is complete, click on reports. The message screen will ask what scale to run report, click on what scale is wanted.

3.10 After the results screen appears press print. A screen will appear asking to print to printer or to file or to cancel out. Choose to printer, then go back through reports to print and place on file using ; "doc file". Exit out of print if there is another test and follow steps 3.2 - 3.11.

3.11 After testing and printing, exit to Main Menu.

4.0 MATERIAL RELEASE

4.1 After testing is completed, release components IAW procedure number 07. If components have failed testing, photocopy should be made and attached to test, (only if component is from DLA).

4.2 Mark all packages with applicable RI/QA test number before releasing to stock.

5.0 RETRIEVING DATA

5.1 When data is to be retrieved exit CAMS and go to "Windows".

5.2 Take disk with data insert into drive and open "Word".

5.3 When in "Word" go to "File" and open "A Drive", find data to be retrieved and open file.

5.4 Once on screen go to "File" and press "Print".

5.5 After printing data, close file and exit "Word".

Receipt Inspection/Quality Assurance Laboratory

Customer Survey

The Office of Safety, Environment and Mission Assurance and the Receipt Inspection and Quality Assurance Laboratory are committed to providing our customers with prompt and quality services. In the spirit of improving services to our customers, we request that you complete this survey and mail it to Mail Stop 421.

Date of service: _____

Type of service requested: _____

Was the service performed in a timely manner? _____

Were you satisfied with the service provided? _____

On a scale of 1-10 (10 being excellent), how would you rate your level of satisfaction? _____

Do you have any comments or suggestions for improvements?

_____

_____

_____

_____

Optional: Your name and phone number: _____

Thank you for completing this survey. We value your comments.

Receipt, Inspection & Quality Assurance Laboratory
Task Assignment # 3
Performance Evaluation Form, Attachment C

TASK: RIQAL		Imp. Fact.[1]	Criteria					Points Awarded
			0	1	2	3	4	---
Cost/Schedule	Monthly Average Processing Times	3	Response times per category more than 1 work day late	Response time per category 1 work day late	Within required response times	1 work day earlier than required response time	More than 1 work day earlier than required	
	Report Submissions	1	Submission more than 6 work days late	Submission 1-5 work days late	On time	Submission before required	NA	
	Cost	3	Cost Variance greater than ± 15%	Cost Variance between ± 10% and ± 15%	Cost Variance between ± 5% and ± 10%	Cost Variance between ± 2% and ± 5%	Cost Variance less than ± 2%	
Technical	Compliance to Processes and Work Instructions	2	Identified non-compliances	NA	No identified non-compliances	NA	NA	
	Accuracy of test findings	3	Identified Inaccuracies	NA	No Identified Inaccuracies	NA	NA	
Qualit	Quality of Special Test Reports	3	Document requires major "re-work"	Lacks specified data or data provided unclear	Provides complete data as specified	Data conveyed concisely and clearly	NA	
	Customer Survey	3	Rating less than 6	Rating of 6	Rating of 7	Rating of 8-9	Rating of 10	
							Total Points Awarded:	
							Total Possible Points:	58
							Grade Percentage:	

0 – Far Below Minimum Acceptable
1 – Below Minimum Acceptable
2 – Minimum Acceptable
3 – Exceeds Minimum Acceptable
4 – Far Exceeds Minimum Acceptable
(Note: [1] = Importance Factor - Value from low of 1 to a high of 3)

Final Grade = (Total Points Awarded/Total Possible Points) x 100 =

ATTACHMENT 4
MODEL CONTRACT NAS1-00077

NASA CONTRACT

1. DPAS	2. RFQ	3. NAT. ORD.	4. PAGE
DO - 09			1 of 21

5. CONTRACT NO.	6. EFFECTIVE DATE	7. PROCUREMENT REQUEST NO.	8. VENDOR CODE
NAS1 - 00077		SCB.1009	

9. ISSUED BY CODE

Building 1195B, Room 125
NASA Langley Research Center
9A Langley Boulevard
Hampton, VA 23681-2199

10. CONTRACTOR NAME AND ADDRESS

Mainthia Technologies Inc.
17535 Rosbough Drive, Suite 200
Corporate Center of Middleburg Hts
Cleveland Ohio 44130

NAME OF CONTRACTOR'S ADMINISTRATOR: Hemant Mainthia
TELEPHONE NO.: 440-816-0202

11. ADMINISTERED BY CODE

National Aeronautics and Space Administration
Langley Research Center
Hampton, VA 23681-2199

12. PAYMENT WILL BE MADE BY CODE

Financial Management Division, M/S 175
NASA Langley Research Center
Hampton, VA 23681-2199

13. SUBMIT INVOICES TO CODE

The address shown in Block 12 and in accordance with Paragraph 8. of this contract.

14. ACCOUNTING AND APPROPRIATIONS DATA

15A. CONTRACT TYPE IDIQ/CPFF

15B. INCREMENTAL FUNDING [X]

TABLE OF CONTENTS

AUTHORITY FOR OTHER THAN FULL AND OPEN COMPETITION:
☒ 10.USC 2304(C) (5) ☐ 41.USC 253(C) ( )

17. ITEMS AWARDED UNDER THIS CONTRACT:

"SAFETY, QUALITY AND RELIABILITY SUPPORT SERVICES"

BVS [ ] TPA Code:

18A. DISCOUNT TERMS	18B. TOTAL AMOUNT OF CONTRACT	$3,000,000
19. NAME AND TITLE (TYPE OR PRINT)	20. NAME OF CONTRACTING OFFICER	PANICE H. CLARK
21. SIGNATURE (OF PERSON AUTHORIZED TO SIGN)	22. SIGNATURE	
CONTRACTOR DATE	UNITED STATES OF AMERICA DATE	

FULL-TEXT CLAUSES

1. SUPPLIES AND/OR SERVICES TO BE FURNISHED (LaRC 52.211-90) (MAY 1999)

The Contractor shall provide all resources (except as may be expressly stated in this contract as furnished by the Government) necessary to perform the requirements delineated in the Description/ Specifications/Work Statement.

2. ORDER LIMITATIONS

Pursuant to the Federal Acquisition Regulation (FAR) Parts 16-501-2 and 16-505, this is contract is defined as an indefinite quantity. The contract provides for an indefinite quantity, within stated limits, of services to be furnished during a fixed period, with performance to be scheduled by placing task orders with the Contractor. The total minimum and maximum dollar value of supplies or services to be acquired under the contract are set forth below:

Contract Minimum: The Government will issue Task Order(s) (TOs) under this contract which provide for a minimum of $400,000 in services.

Contract Maximum: The Government issued TOs under this contract shall not exceed a maximum of $3,000,000 in services for the entire period of performance.

3. CONTRACT FUNDING (NFS 1852.232-81) (JUN 1990)

(a) For purposes of payment of cost, exclusive of fee, in accordance with the Limitation of Funds clause, the total amount allotted by the Government to this contract is $_____. This allotment covers the following estimated period of performance: _____.

(b) An additional amount of $_____ is obligated under this contract for payment of fee.

4. FINAL INSPECTION AND ACCEPTANCE (LARC 52.246-94) (OCT 1992)

Final inspection and acceptance of all items specified for delivery under this contract shall be accomplished by the Contracting Officer or his duly authorized representative at NASA Langley Research Center.

5. PLACE OF DELIVERY (LaRC 52.211-92) (OCT 1992)

Delivery shall be f.o.b. destination:

As specified in Task Orders.

6. PERIOD OF PERFORMANCE (LaRC 52.211-98) (OCT 1992)

(a.) The period of performance of this contract shall be 48 months from the effective date of this contract.

(b.) Pursuant to Clause 52.216-18 entitled "Ordering," Task Orders may be issued from contract award through the end of the contract term.

(c.) Any Task Order issued prior to the expiration of the period of issuance of Task Orders shall be completed, provided that the Contractor will not be required to perform any work beyond the total contract period of performance.

7. PLACE OF PERFORMANCE (LaRC 52.211-98) (OCT 1992)

The place of performance shall be NASA, Langley Research Center, Hampton, Virginia and other sites as may be designated by Task Order.

8. SUBMISSION OF VOUCHERS FOR PAYMENT (NFS 1852.216-87) (MAR 1998)

(a) The designated billing office for cost vouchers for purposes of the Prompt Payment clause of this contract is identified below. Public vouchers for payment of costs shall include a reference to the number of this contract, summary of the cost elements that makes up the total amount being billed, and a list that provides the amount being billed for each task.

(b)(1) If the Contractor is authorized to submit interim cost vouchers directly to the NASA paying office, the original voucher should be submitted to:

Attn: Financial Management Division, MS 175
NASA Langley Research Center
Hampton, VA 23681-2199

(2) For any period that the Defense Contract Audit Agency has authorized the Contractor to submit interim cost vouchers directly to the Government paying office, interim vouchers are not required to be sent to the Auditor, and are considered to be provisionally approved for payment, subject to final audit.

(3) Copies of vouchers should be submitted as directed by the Contracting Officer.

(c) If the Contractor is not authorized to submit interim cost vouchers directly to the paying office as described in paragraph (b), the Contractor shall prepare and submit vouchers as follows:

(1) One original Standard Form (SF) 1034, SF 1035, or equivalent Contractor's attachment to the Contractor's cognizant DCAA office.

(2) Five copies of SF 1034, SF 1035A, or equivalent Contractor's attachment to the following offices by insertion in the memorandum block of their names and addresses:

(i) Copy 1 NASA Contracting Officer;
(ii) Copy 2 Auditor;
(iii) Copy 3 Contractor;
(iv) Copy 4 Contract administration office; and
(v) Copy 5 Project management office.

(3) The Contracting Officer may designate other recipients as required.

(d) Public vouchers of payment of fee shall be prepared similarly to the procedures in paragraphs (b) or (c) of this clause, whichever is applicable, and be forwarded to:

Attn: Financial Management Division, MS 175
NASA Langley Research Center
Hampton, VA 23681-2199

This is the designated billing office for fee vouchers for purposes of the Prompt Payment clause of this contract.

(e) In the event that amounts are withheld from payment in accordance with provisions of this contract, a separate voucher for the amount withheld will be required before payment for that amount may be made.

9. INVOICES AND PAYMENTS (LaRC 52.232-96) (OCT 1992)

(a) General—Invoices shall be addressed as shown in Block 12 on page 1 of this contract and shall be identified by the contract number. Cost and fee invoices shall be submitted separately.

(b) Cost—Payments of cost shall be made in monthly installments.

(c) Fixed Fee—Payments of fixed fee shall be made in monthly installments based upon the percentage of completion of work as determined by the Contracting Officer. Notwithstanding, any payments shall be subject to the withholding provisions of the clause of this contract entitled "Fixed Fee."

10. TASK ORDER TYPE

Task Orders will be issued on a cost reimbursable basis. Each Task Order will have an authorized estimated cost and fixed fee amount.

11. CONTRACT CLOSEOUT (LaRC 52.242-90) (MAY 1999)

(a) Reassignment—After receipt, inspection, and acceptance by the Government of all required articles and/or services, and resolution of any pending issues raised during the Period of Performance, this contract will be reassigned to the NASA Langley Research Center Contracting Officer for Contract Closeout, James W. Cresawn. All transactions subsequent to the physical completion of the contract should, therefore, be addressed to the said Contracting Officer at NASA Langley Research Center, Mail Stop 127, who may be reached by telephone at (757) 864-2500.

(b) "Quick Closeout"—Paragraph (f) of the Allowable Cost and Payment clause of this contract addresses the "Quick Closeout Procedure" delineated by Subpart 42.7 of the Federal Acquisition Regulation (FAR). It should be understood that the said procedure applies to the settlement of indirect costs for a specific contract in advance of the determination of final indirect cost rates when the amount of unsettled indirect cost to be allocated to the contract is relatively insignificant. Therefore, the "Quick Closeout" procedure does not preclude the provisions of paragraph (d) of the Allowable Cost and Payment clause nor does it constitute a waiver of final audit of the Contractor's Completion Voucher.

(c) Completion Voucher Submittal—Notwithstanding the provisions of the Allowable Cost and Payment clause, as soon as practicable after settlement of the Contractor's indirect cost rates applicable to performance of the contract, the Contractor shall submit a Completion Voucher as required by the aforesaid clause. The Completion Voucher shall be supported by a cumulative claim and reconciliation statement and executed NASA Forms 778, Contractor's Release, and 780, Contractor's Assignment of Refunds, Rebates, Credits, and Other Amounts. Unless directed otherwise by the Contracting Officer for Contract Closeout, the Contractor shall forward the said Completion Voucher directly to the cognizant Government Agency to which audit functions under the contract have been delegated.

12. OBSERVATION OF REGULATIONS AND IDENTIFICATION OF CONTRACTOR'S EMPLOYEES (LaRC 52.211-104) (MAY 1999)

(a.) Observation of Regulations--In performance of that part of the contract work which may be performed at Langley Research Center or other Government installation, the Contractor shall require its employees to observe the rules and regulations as prescribed by the authorities at Langley Research Center or other installation including all applicable Federal, NASA and Langley or other local installation safety, health, environmental and security regulations.

(b.) Identification Badges--At all times while on LaRC property, the Contractor shall require its employees, subcontractors and agents to wear badges which will be issued by the NASA Contract Badge and Pass Office, located at 1 Langley Boulevard (Building No. 1228). Badges shall be issued only between the hours of 6:30 a.m. and 3:30 p.m., Monday through Friday. Contractors will be held accountable for these badges, and may be required to validate outstanding badges on an annual basis with the NASA LaRC Security Office. Immediately after employee termination or contract completion, badges shall be returned to the NASA Contract Badge and Pass Office.

13. LIST OF INSTALLATION-ACCOUNTABLE PROPERTY AND SERVICES (NASA 1852.245-77) (JUL 1997)

In accordance with the clause at 1852.245-71, Installation-Accountable Government Property, the Contractor is authorized use of the types of property and services listed below, to the extent they are available, in the performance of this contract within the physical borders of the installation which may include buildings and space owned or directly leased by NASA in close proximity to the installation, if so designated by the Contracting Officer.

(a) Office space, work area space, and utilities. Government telephones are available for official purposes only; pay telephones are available for contractor employees for unofficial calls.

(b) General- and special-purpose equipment, including office furniture.

(1) Equipment to be made available is listed in Attachment C. The Government retains accountability for this property under the clause at 1852.245-71, Installation-Accountable Government Property, regardless of its authorized location.

(2) If the Contractor acquires property, title to which vests in the Government pursuant to other provisions of this contract, this property also shall become accountable to the Government upon its entry into Government records as required by the clause at 1852.245-71, Installation-Accountable Government Property.

(3) The Contractor shall not bring to the installation for use under this contract any property owned or leased by the Contractor, or other property that the Contractor is accountable for under any other Government contract, without the Contracting Officer's prior written approval.

(c) Supplies from stores stock: Not Available.

(d) Publications and blank forms stocked by the installation.

(e) Safety and fire protection for Contractor personnel and facilities.

(f) Installation service facilities: N/A

(g) Medical treatment of a first-aid nature for Contractor personnel injuries or illnesses sustained during on-site duty.

(h) Cafeteria privileges for Contractor employees during normal operating hours.

(i) Building maintenance for facilities occupied by Contractor personnel.

(j) Moving and hauling for office moves, movement of large equipment, and delivery of supplies. Moving services shall be provided on-site, as approved by the Contracting Officer.

(k) The user responsibilities of the Contractor are defined in paragraph (a) of the clause at 1852.245-71, Installation-Accountable Government Property.

14. PROVIDING FACILITIES TO CONTRACTORS (LaRC 52.245-90) (AUG 1997)

(a.) In accordance with FAR 45.302-1, it is policy of the Government that Contractors shall furnish all facilities required for performing Government contracts. "Facilities" include real property and plant equipment including personal property such as general purpose off-the-shelf equipment, machine tools, test equipment, furniture and vehicles. "Facilities" do not include material, special test equipment, special tooling or agency-peculiar property.

(b.) In keeping with the policy set forth in FAR 45.302-1, the Government will not provide NEW "facilities," except as provided for in the Statement of Work.

(c.) However, the Government will provide EXISTING facilities as listed in Paragraph 13. and Exhibit C. Any of these existing facilities that reach the end of their useful life during the contract period, or which are beyond economical repair, shall be replaced by the Contractor, if the facilities are still needed for contract performance. **This replacement policy does not apply to the items that are located in Government equipped facilities as identified in Exhibit C and the Statement of Work.**

(d.) Notwithstanding the "Allowable Cost and Payment" clause of this contract, cost of facilities are not an allowable cost except when charged to this contract in accordance with your approved accounting system.

15. CONTRACTOR EMPLOYEE'S SECURITY CLEARANCE (LaRC 52.204-90) (OCT 1996)

By virtue of their particular work assignment, certain Contractor employees, may be required to have a security clearance granted in accordance with the National Industry Security Program Operating Manual (NISPOM)

dated March 14, 1996. Clearances will be issued by the Department of Defense (DOD). Within 10 working days after an employee is identified by the Government and/or the Contractor as requiring a SECRET or higher clearance, the Contractor shall submit to the Contracting Officer evidence of the submittal of a request for clearance to DOD for such employee. If the clearance for an employee has not been issued by DOD within 120 calendar days of the submittal of the request for clearance to DOD, the Contractor may be required to remove the employee from the contract.

16. SECURITY PROGRAM/FOREIGN NATIONAL EMPLOYEE INVESTIGATIVE REQUIREMENTS (LaRC 52.204-91) (AUG 1997)

Prior to reporting to Langley Research Center (LaRC) to perform under a contract or grant, each Foreign National shall have approval for access to LaRC facilities from Office of Space Science and Aeronautics (Code IS). A copy of the access authorization request shall be provided to the LaRC Chief of Security. Additionally, an investigation by the Government shall be completed on each Foreign National contractor prior to reporting to LaRC to perform under a contract or grant. A properly executed "Name Check Request" (NASA Form 531) and a completed "applicant" fingerprint card shall be submitted to the LaRC Security Office, Mail Stop 450, for each Foreign National contractor at least 75 days prior to the estimated entry on duty date. The NF 531 and fingerprint card may be obtained from the LaRC Security Office. If the access approval is obtained from NASA Headquarters prior to completion of the investigation, and the Contracting Officer requires a Foreign National to work on LaRC, an escort request may be considered by the LaRC Chief of Security.

17. UNESCORTED ACCESS BY CONTRACTOR EMPLOYEES

Background investigations are required for Contractor employees to have unescorted access to the Langley Research Center. All Contractor employees must, as a minimum, have a favorably adjudicated National Agency Check (NAC). The NAC is not required if the Contractor can certify that an employee has a Confidential or higher security clearance or a favorably adjudicated current investigation. When it is necessary for an employee to perform work prior to completion of the NAC, the employee may be escorted while at the site by an individual who has a favorable NAC or a higher level of investigation favorably adjudicated, or a Confidential or higher level security clearance or as otherwise approved by the LaRC Security Officer.

18. WORK SCHEDULE--ON-SITE ONLY (LaRC 52.211-103) (JUL 1991)

In order that the necessary and proper inspection of the Contractor's work may be effectively accomplished, and to assure the availability of required Government interface, the Contractor shall schedule work performance hereunder so as to be compatible with the established workweek and hours of work observed by the Government organization having cognizance over the work being performed, which is 8:00 a.m. to 4:30 p.m., with core hours between 9:00 a.m. and 3:00 p.m., Monday through Friday.

19. SPECIAL 8(A) CONTRACT CONDITIONS (FEB 1990) (FAR 52.219-11) (DEVIATION)

(a) This contract is issued as a direct award between the contracting activity and the 8(a) contractor pursuant to Memorandum of Understanding between the Small Business Administration (SBA) and the National Aeronautics and Space Administration. Accordingly, the SBA is not a party to this contract. SBA does retain responsibility for 8(a) certification, 8(a) eligibility determinations and related issues, and providing counseling and assistance to the 8(a) contractor under the 8(a) program. The cognizant SBA district office is:

U.S. Small Business Administration
SBA Cleveland District Office
1111 Superior Ave., Suite 630
Cleveland, OH 44114-2507

(b) The contracting activity is responsible for administering the contract and taking any action on behalf of the Government under the terms and conditions of the contract; provided, however, that the contracting activity shall give advance notice to the SBA before it issues a final notice terminating performance, either in whole or in part, under the contract. The contracting activity shall also coordinate with the SBA prior to processing any

novation agreement. The contracting activity may assign contract administration functions to a contract administration office.

(c) The contractor agrees--

(1) To notify the Contracting Officer, simultaneous with its notification to SBA (as required by SBA's 8(a) regulations), when the owner or owners upon whom 8(a) eligibility is based plan to relinquish ownership or control of the concern. Consistent with Section 407 of Public Law 100-656, transfer of ownership or control shall result in termination of the contract for convenience, unless SBA waives the requirement for termination prior to the actual relinquishing of ownership and control; and

(2) It will not subcontract the performance of any of the requirements of this contract without the prior written approval of the SBA and the Contracting Officer.]

20. ADVANCE AGREEMENT ON INDIRECT RATE(S) (LaRC 52.231-90) (JUN 1988)

(a) Notwithstanding the provisions of the Paragraph 29 clause entitled "Allowable Cost and Payment," the Contractor will be reimbursed at the indirect ceiling rates specified below or the actual rates, whichever are less, for each of the Contractor's fiscal years applicable to this contract. The Contractor's fiscal year is [redacted]. Any costs that are not reimbursed due to the ceilings shall be deemed unallowable costs. These unallowable costs shall not be recovered under this or any other Government contract.

Indirect Cost Pool	Ceiling Percentage	Allocation Base

(b) The above rate ceilings are predicated upon the bases listed above and the accounting practices and accounting system in effect on [redacted]. If the Contractor changes its accounting practices or accounting system in any way, the Contractor will immediately notify the Government. Within 30 days of such change the Contractor shall present to the Contracting Officer information that demonstrates that the change will not impact the allowable cost computed using the above rates or shall submit a proposal for adjustment of the ceilings so that the total costs allowable will not exceed the total costs that would have been allowable had the Contractor not changed its accounting practices or accounting system. In the event that the parties cannot agree on new ceilings using the Contractor's new accounting practices or system and the Contractor does not agree to return to the previous accounting practices and system, the Contracting Officer may equitably adjust the ceilings.

21. YEAR 2000 COMPLIANCE (MAY 1998)

(a) Definition: "Year 2000 compliant", as used in this clause, means that the information technology (hardware, software and firmware, including embedded systems or any other electro-mechanical or processor-based systems used in accordance with its associated documentation) accurately processes date and date-related data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000 and leap year calculations, to the extent that other information technology, used in combination with the information technology being acquired, properly exchanges date and date-related data with it.

(b) Any information technology provided, operated and/or maintained under this contract is required to be Year 2000 compliant. To ensure this result, the Contractor shall provide documentation describing how the IT items or services demonstrate Year 2000 compliance, consisting of:

Documentation and testing for Year 2000 compliance shall be based on complexity and the risk associated with the IT item. The Contractor shall use the documents "NASA Year 2000 Agency Test and Certification Guidelines and Requirements," dated July 2, 199 (available at http://cio.larc.nasa.gov/y2k/) and "NASA LaRC Y2K Compliance Verification Form" (Attachment C hereto) for each IT item/system provided or maintained under this contract.

(c) The Contractor warrants that any IT items or services provided under this contact that involve the processing of date and date-related data are Year 2000 compliant. If the contract requires that specific listed

products must perform as a system in accordance with the foregoing warranty, then that warranty shall apply to those listed products as a system.

(d) The remedies available under this warranty shall include repair or replacement, at no additional cost to the Government, of any provided items or services whose non-compliance is discovered and made known to the Contractor in writing within 90 days after acceptance. In addition, all other the terms and limitations of the Contractor's standard commercial warranty or warranties shall be available to the Government for the IT items or services acquired under this contract. Nothing in this warranty shall be construed to limit any rights or remedies the Government may otherwise have under this contract with respect to defects other than Year 2000 performance.

22. REPRESENTATIONS, CERTIFICATIONS, AND OTHER STATEMENTS OF OFFERORS OR QUOTERS INCORPORATED BY REFERENCE

The Representations, Certifications, and Other Statements of Offerors or Quoters, dated [redacted], as completed by the Contractor are hereby incorporated in their entirety by reference, with the same force and effect as if they were given in full text.

23. ORDERING (FAR 52.216-18) (OCT 1995)

(a) Any supplies and services to be furnished under this contract shall be ordered by issuance of delivery orders or task orders by the individuals or activities designated in the Schedule. Such orders may be issued from the effective date of the contract through the completion date of the contract.

(b) All delivery orders or task orders are subject to the terms and conditions of this contract. In the event of conflict between a delivery order or task order and this contract, the contract shall control.

(c) If mailed, a delivery order or task order is considered "issued" when the Government deposits the order in the mail. Orders may be issued orally, by facsimile, or by electronic commerce methods only if authorized in the Schedule.

24. ORDER LIMITATIONS (FAR 52.216-19) (OCT 1995)

(a) *Minimum order*. When the Government requires supplies or services covered by this contract in an amount of less than $15,000, the Government is not obligated to purchase, nor is the Contractor obligated to furnish, those supplies or services under the contract.

(b) *Maximum order*. The Contractor is not obligated to honor--

(1) Any order for a single item in excess of $500,000 ;

(2) Any order for a combination of items in excess of $ 500,000; or

(3) A series of orders from the same ordering office within 10 days that together call for quantities exceeding the limitation in subparagraph (1) or (2) above.

(c) If this is a requirements contract (i.e., includes the Requirements clause at subsection 52.216-21 of the Federal Acquisition Regulation (FAR)), the Government is not required to order a part of any one requirement from the Contractor if that requirement exceeds the maximum-order limitations in Paragraph (b) above.

(d) Notwithstanding paragraphs (b) and (c) above, the Contractor shall honor any order exceeding the maximum order limitations in paragraph (b), unless that order (or orders) is returned to the ordering office within 5 days after issuance, with written notice stating the Contractor's intent not to ship the item (or items) called for and the reasons. Upon receiving this notice, the Government may acquire the supplies or services from another source.

25. INDEFINITE QUANTITY (FAR 52.216-22) (Oct 1995)

(a) This is an indefinite-quantity contract for the supplies or services specified, and effective for the period stated, in the Schedule. The quantities of supplies and services specified in the Schedule are estimates only and are not purchased by this contract.

(b) Delivery or performance shall be made only as authorized by orders issued in accordance with the Ordering clause. The Contractor shall furnish to the Government, when and if ordered, the supplies or services specified in the Schedule up to and including the quantity designated in the Schedule as the "maximum." The Government shall order at least the quantity of supplies or services designated in the Schedule as the "minimum."

(c) Except for any limitations on quantities in the Order Limitations clause or in the Schedule, there is no limit on the number of orders that may be issued. The Government may issue orders requiring delivery to multiple destinations or performance at multiple locations.

(d) Any order issued during the effective period of this contract and not completed within that period shall be completed by the Contractor within the time specified in the order. The contract shall govern the Contractor's and Government's rights and obligations with respect to that order to the same extent as if the order were completed during the contract's effective period; provided, that the Contractor shall not be required to make any deliveries under this contract after six months after the effective period ends.

26. TASK ORDERING PROCEDURE (NASA 1852.216-80) (OCT 1996)

(a) Only the Contracting Officer may issue task orders to the Contractor, providing specific authorization or direction to perform work within the scope of the contract and as specified in the schedule. The Contractor may incur costs under this contract in performance of task orders and task order modifications issued in accordance with this clause. No other costs are authorized unless otherwise specified in the contract or expressly authorized by the Contracting Officer.

(b) Prior to issuing a task order, the Contracting Officer shall provide the Contractor with the following data:

(1) A functional description of the work identifying the objectives or results desired from the contemplated task order.

(2) Proposed performance standards to be used as criteria for determining whether the work requirements have been met.

(3) A request for a task plan from the Contractor to include the technical approach, period of performance, appropriate cost information, and any other information required to determine the reasonableness of the Contractor's proposal.

(c) Within 5 calendar days after receipt of the Contracting Officer's request, the Contractor shall submit a task plan conforming to the request.

(d) After review and any necessary discussions, the Contracting Officer may issue a task order to the Contractor containing, as a minimum, the following:

(1) Date of the order.

(2) Contract number and order number.

(3) Functional description of the work identifying the objectives or results desired from the task order, including special instructions or other information necessary for performance of the task.

(4) Performance standards, and where appropriate, quality assurance standards.

(5) Maximum dollar amount authorized (estimated cost and fixed fee).

(6) Any other resources (travel, materials, equipment, facilities, etc.) authorized.

(7) Delivery/performance schedule including start and end dates.

(e) The Contractor shall provide acknowledgment of receipt to the Contracting Officer within 2 calendar days after receipt of the task order.

(f) If time constraints do not permit issuance of a fully defined task order in accordance with the procedures described in paragraphs (a) through (d), a task order which includes a ceiling price may be issued.

(g) The Contracting Officer may amend tasks in the same manner in which they were issued.

(h) In the event of a conflict between the requirements of the task order and the Contractor's approved task plan, the task order shall prevail.

27. AVAILABILITY OF NASA MANAGEMENT INSTRUCTIONS (NMIs), NASA POLICY DIRECTIVES (NPDs), NASA PROCEDURES AND GUIDELINES (NPGs), NASA HANDBOOKS (NHBs) AND LANGLEY POLICY GUIDELINES (LPGs)

The NMIs, NPDs and NPGs and NHBs as referenced in the SOW are available by accessing the following site: http://nodis.hq.nasa.gov/Library/Directives/NASA-WIDE/contents.html. The LPGs referenced in the SOW are available by accessing http://ldms.larc.nasa.gov/directives.html.

28. SCHEDULE OF RATES

The schedule of rates included in this contract as Attachment A shall be used as a basis for establishing the estimated cost of individual Task Orders together with any "other Direct Costs" associated with the specific requirements of the order. During performance of the order, it remains the Contractor's responsibility to determine and adjust, as necessary, the labor mix, and amount of labor needed to perform, since the rates are to be used only for establishing the estimated cost for an order. However, since this is a cost reimbursement contract, the Contractor shall be paid whatever cost they incur as long as the costs are allowable, allocable, and reasonable and within the funded limitation of individual Task Orders. In the event the Contractor's "rate structure" changes, the schedule may be adjusted by bilateral modification.

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

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

http://www.arnet.gov/far/

http://www.hq.nasa.gov/office/procurement/regs/nfstoc.htm

A. FEDERAL ACQUISITION REGULATION (48 CFR CHAPTER 1) CLAUSES

52.202-1	Definitions (Oct 1995)
52.203-3	Gratuities (Apr 1984)
52.203-5	Covenant Against Contingent Fees (Apr 1984)
52.203-6	Restrictions on Subcontractor Sales to the Government (Jul 1995)
52.203-7	Anti-Kickback Procedures (Jul 1995)
52.203-8	Cancellation, Rescission and Recovery of Funds for Illegal or Improper Activity (Jan 1997)
52.203-10	Price or Fee Adjustment for Illegal or Improper Activity (Jan 1997)
52.203-12	Limitation on Payments to Influence Certain Federal Transactions (Jun 1997)
52.204-2	Security Requirements (Aug 1996)
52.204-4	Printing/Copying Double-Sided or Recycled Paper (Jun 1996)
52.209-6	Protecting the Government's Interest When Subcontracting with Contractors Debarred, Suspended, or Proposed for Debarment (Jul 1995)
52.211-15	Defense Priority and Allocation Requirements (Sep 1990)
52.215-2	Audit and Records -- Negotiation (Jun 1999)
52.215-8	Order of Precedence (Oct 1997)
52.215-10	Price Reduction for Defective Cost or Pricing Data (Oct 1997)
52.215-12	Subcontractor Cost or Pricing Data (Oct 1997)
52.215-15	Pension Adjustment and Asset Reversion (Dec 1998)
52.215-17	Waiver of Facilities Capital Cost of Money (Oct 1997)
52.215-18	Reversion or Adjustment of Plans for Postretirement Benefits Other Than Pensions (Oct 1997)
52.215-19	Notification of Ownership Changes (Oct 1997)

52.215-21	Requirements for Cost or Pricing Data or Information Other Than Cost or Pricing Data - Modifications (Oct 1997)
52.216-7	Allowable Cost and Payment (Apr 1998)
52.216-8	Fixed Fee (Mar 1997)
52.219-8	Utilization of Small Business Concerns (Jun 1999)
52.219-14	Limitations on Subcontracting (Dec 1996)
52.222-1	Notice to the Government of Labor Disputes (Feb 1997)
52.222-2	Payment for Overtime Premiums (Jul 1990) [Insert $0 in Paragraph (a).]
52.222-3	Convict Labor (Aug 1996)
52.222-4	Contract Work Hours and Safety Standards Act -- Overtime Compensation (Jul 1995)
52.222-21	Prohibition of Segregated Facilities (Feb1999)
52.222-26	Equal Opportunity (Feb 1999)
52.222-35	Affirmative Action for Disabled Veterans and Veterans of the Vietnam Era (Apr 1998)
52.222-36	Affirmative Action for Workers with Disabilities (Jun 1998)
52.222-37	Employment Reports on Disabled Veterans and Veterans of the Vietnam Era (Jan 1999)
52.222-41	Service Contract Act of 1965, as Amended (May 1989)
52.223-4	Recovered Material Certification (Oct 1997)
52.223-5	Pollution Prevention and Right-to-Know Information (Apr 1998)
52.223-6	Drug-free Workplace (Jan 1997)
52.223-9	Certification and Estimate of Percentage of Recovered Material Content for EPA Designated Items (Oct 1997)
52.223-14	Toxic Chemical Release Reporting (Oct 1996)
52.225-3	Buy American Act - Supplies (Jan 1994)
52.225-11	Restrictions on Certain Foreign Purchases (Aug 1998)
52.227-1	Authorization and Consent (Jul 1995)
52.227-2	Notice and Assistance Regarding Patent and Copyright Infringement (Aug 1996)
52.227-11	Patent Rights--Retention by the Contractor (Short Form) (Jun 1997)--as modified by NASA FAR Supplement 1852.227-11
52.227-14	Rights in Data -- General (Jun 1987) -- As Modified by NASA FAR Supplement 1852.227-14
52.228-7	Insurance -- Liability to Third Persons (Mar 1996)
52.232-9	Limitation on Withholding Payments (Apr 1984)
52.232-17	Interest (Jun 1996)
52.232-22	Limitation of Funds (Apr 1984)
52.232-23	Assignment of Claims (Jan 1986)
52.232-25	Prompt Payment (Jun 1997) [Insert 30th day in subparagraph (b)(2)]
52.232-34	Payment by Electronic Funds Transfer—Other Than Central Contractor Registration (May 1999) [Insert "no later than 15 days prior to submission of the first request for payment" in Paragraph (b)(1).]
52.233-1	Disputes (Dec 1998) -- Alternate I (Dec 1991)
52.237-2	Protection of Government Buildings, Equipment, and Vegetation (Apr 1984)
52.237-3	Continuity of Services (Jan 1991)
52.239-1	Privacy or Security Safeguards (Aug 1996)
52.242-1	Notice of Intent to Disallow Costs (Apr 1984)
52.242-3	Penalties for an Unallowable Cost (Oct 1995)
52.242-4	Certification of Final Indirect Cost (Jan 1997)
52.242-13	Bankruptcy (Jul 1995)
52.242-15	Stop-Work Order (Aug 1989)--Alternate I (Apr 1984)
52.243-2	Changes -- Cost-Reimbursement (Aug 1987) -- Alternate II (Apr 1984)
52.244-2	Subcontracts (Aug 1998) -- Alternate I (Aug 1998)
52.244-5	Competition in Subcontracting (Dec 1996)
52.244-6	Subcontracts for Commercial Items and Commercial Components (Oct 1998)
52.245-1	Property Records (Apr 1984)
52.245-5	Government Property (Cost-Reimbursement, Time-and-Material, or Labor-Hour Contracts) (Jan 1986) (Deviation) (Jul 1995)
52.246-3	Inspection of Supplies--Cost-Reimbursement (Apr 1984)
52.246-5	Inspection of Services--Cost-Reimbursement (Apr 1984)

52.246-23	Limitation of Liability (Feb 1997)
52.246-25	Limitation of Liability – Services (Feb 1997)
52.249-6	Termination (Cost-Reimbursement) (Sep 1996)
52.249-14	Excusable Delays (Apr 1984)
52.252-6	Authorized Deviations in Clauses (Apr 1984)
52.253-1	Computer Generated Forms (Jan 1991)

B. NASA/FAR SUPPLEMENT (48 CFR CHAPTER 18) CLAUSES

1852.208-81	Restrictions on Printing and Duplicating (Aug 1993)
1852.215-84	Ombudsman (Oct 1996) LaRC: Belinda Adams, direct inquires to Sandra S. Ray, (757) 864-2428 NASA: Administrator for Procurement, Tom Leudtke, (202) 358-2090
1852.216-75	Payment of Fixed Fee (Dec 1988)
1852.216-89	Assignment and Release of Forms (July 1997)
1852.219-74	Use of Rural Area Small Businesses (Sep 1990)
1852.219-76	NASA 8 Percent Goal (July 1997)
1852.223-70	Safety and Health (Mar 1997)
1852.227-72	Designation of New Technology Representative and Patent Representative (Jul 1997)[Insert titles "New Technology Representative," "Patent Representative," Office Code "212" (both); address "NASA, Langley Research Center, Hampton, VA 23681-2199."]
1852.228-75	Minimum Insurance Coverage (Oct 1988)
1852.237-70	Emergency Evacuation Procedures (Dec 1988)
1852.242-70	Technical Direction (Sep 1993)
1852.242-72	Observance of Legal Holidays (Aug 1992)--Alternate I (Sep 1989)
1852.242-73	NASA Contractor Financial Management Reporting (Jul 1997)
1852.243-71	Shared Savings (March 1997)
1852.245-70	Contractor Requests for Government-Owned Equipment (July 1997)
1852.245-71	Installation-Accountable Government Property (Jun 1998) [Onsite]

30. REPORTING REQUIREMENTS

A. Financial Management Reports--The Contractor shall comply with the clause of this contract entitled "NASA Contractor Financial Management Reporting" by monthly submission of NASA Form 533M. The form shall be prepared and submitted in accordance with the instructions set forth on the reverse side of the form and NPG 9501.2C, NASA Contractor Financial Management Reporting as further definitized below.

1. Due not later than the 10th operating day following the close of the Contractor's accounting period being reported.

2. Columns 7.b. and d. shall be completed using the time-phased financial baseline plan.

3. Columns 8.a. and b. shall be completed using estimates (forecasts) for the succeeding two months.

4. Minimum reporting categories:

Direct Labor Hours
Program Management Hours
Direct Labor Dollars
Program Management Dollars
Overhead(s)
Subcontract
Materials
Other Direct Cost
G&A

Total Estimated Cost
Fixed Fee
Total Estimated Cost

5. A summary 533M report shall be required detailing hours and dollars for the total contract and individual Task Orders.

6. Each 533M shall include a narrative explanation for variances exceeding 10 percent between planned hours and dollars and actual hours and dollars for each reporting category for the contract summary page.

B. Safety and Health Plan--Within 30 calendar days after the effective date of the contract, the Contractor shall submit a detailed safety and health plan showing how the Contractor intends to protect the life, health, and well being of NASA and Contractor employees as well as property and equipment. This plan, as approved by the Contracting Officer, should contain, as a minimum the following:

1. Points of Contact and Responsibility--Organizational flow chart and description of responsibilities of each employee in your organization for safety.

2. Employee Safety Training, Certification and Programs--Detailed information on type of training required, parties responsible for certification, and outline of applicable regulations. Detail company programs which emphasize personal safety and motivate employees to be safety conscious.

3. LaRC Safety Policies/Procedures--Recognition of applicable LaRC safety policies and procedures such as LAPG 1710.10, Safety Clearance Procedures (Lockout/Tagout).

4. Accident Investigation and Reporting--Procedures for investigating and reporting accidents/incidents including immediate notification to the NASA LaRC Safety Manager of all injuries and damage to equipment or facilities.

Procedures For Responding To LaRC Notices Of Safety Violations

5. Hazardous Operations--

(a) Description of hazardous operations involved in contract performance.

(b) Plans for apprising employees of all hazards to which they may be exposed.

(c) Proper conditions and precautions for safe use and exposure to hazardous operations. Include recognition of LAPG 1710.12, Potentially Hazardous Materials.

6. People with Disabilities--In accordance with the Americans with Disabilities Act, the plans should specify that prior to assigning a person with disabilities to this contract, the Contractor shall contact the Disability Program Manager at (757) 864-7718.

7. Other Safety Considerations--Any other safety considerations unique to your operation.

C. Monthly Progress Reports--The Contractor shall submit monthly performance reports for each task order describing work accomplished during each month of contract performance per active task order. Reports shall be in narrative form and brief and informal in content. Monthly reports shall include a description of overall progress, an indication of any current problems which may impede performance to include proposed corrective action and a discussion of the work to be performed during the next monthly reporting period. In addition, the following monthly data shall be included in a format to be Contractor selected:

- NASA Point of Contact
- Effective Date of Order

- Required Completion Date
- Contractor Estimated Completion Date
- Milestone Status: Schedule versus Forecast

The above will be reviewed at a monthly technical review meeting.

D. Quarterly Accident Injury Report--The Contractor shall submit a Quarterly Accident/Injury Report within 10 days after the end of each quarter.

E. Documentation for Transferring Property to the Government

In accordance with the Installation-Provided Government Property clause of this contract, accountability for that property which is acquired for the Government under this contract shall be passed to the Government using the following procedure:

The transfer of accountability shall be initiated by the Contractor submitting a Requisition and Invoice/Shipping Document, DD Form 1149, accompanied by a copy of the Contractor's applicable purchasing and receipt document for the property. The Contractor shall insert both the Contractor's Subcontract/ Purchase Order number and the Government contract number on the DD Form 1149 under the "Federal Stock Number, Description, and Coding of Material and/or Services" block. For purchases of supplies and materials, this document shall be submitted within 30 days after the end of each calendar-year quarter (that is, not later than January 30, April 30, July 30, and October 30). For equipment purchases, this document shall be submitted within five workdays after acceptance of each item of equipment by the Contractor. Receipt by the Contractor of a copy of the DD Form 1149 signed by the Government relieves the Contractor of accountability for the property specified on that form.

F. Year 2000 Compliance Documentation--In accordance with Paragraph 21 the Contractor shall provide for the review and approval of the Contracting Officer the documentation that demonstrates Year 2000 compliance.

G. Federal Contractor Veterans Employment Report--In compliance with FAR clause 52.222-37, Employment Reports on Disabled Veterans and Veterans of the Vietnam Era, the Contractor shall submit the Federal Contractor Veterans Employment Reports (VETS-100) as required by this clause.

H. Evidence of Insurance--The Contractor shall submit evidence of the insurance coverage, required by the NASA Clause 1852.228-75 entitled "Minimum Insurance Coverage" (i.e., a Certificate of Insurance or other confirmation), to the Contracting Officer prior to performing under this contract. In the event the Government exercises its options to extend the term of the contract, the Contractor shall also present such evidence to the Contracting Officer prior to commencement of performance under the extension.

I. Quality Plan—Within 30 calendar days after the effective date of the contact, the Contractor shall submit a quality plan which addresses how the contractor will ensure the technical accuracy and quality of all task orders. The plan shall reflect and incorporate the quality processes and quality management practices the Contractor will utilize in performance of the contract. Within 15 days after submission, the plan and subsequent revisions will be reviewed and approved by the Contracting Officer and/or the COTR.

J. Reports Distribution

Unless otherwise specified elsewhere in this contract, reports and other documentation shall be submitted F.O.B. destination as specified below, addressed as follows:

National Aeronautics and Space Administration
Langley Research Center
Attn: _____, Mail Stop _____
Contract NAS1-00077
Hampton, VA 23681-2199

The following letter codes designate the recipients of reports and other documentation which are required to be delivered prepaid to Langley Research Center by the Contractor:

A--Contract Specialist, Mail Stop 126

B--Contracting Officer Technical Representative, Mail Stop 421

C--New Technology Representative, Mail Stop 212

D--Cost Accounting, Mail Stop 135

E--Safety Manager, Mail Stop 429

F--Industry Relations Office, Mail Stop 144

G--Programs and Resources Division, Mail Stop 104

H--Patent Counsel, Mail Stop 212

I--Industrial Property Office, Mail Stop 377

The following are the distribution requirements for reports and other documentation required with the numeral following the letter code specifying the number of copies to be provided:

DOCUMENT	LETTER CODE AND DISTRIBUTION
Financial Management Report (NASA Forms 533M and 533Q)	A-1, B-2, D-2, G-1
Safety and Health Plan	A-1, B-1, E-1
Monthly Progress Report	A-1, B-3
Quarterly Accident/Injury Report	A-1, B-1, E-1
Patent Rights Report	A-1, B-2, C-1, H-1
Requisition and Invoice/Shipping Document (DD Form 1149)	I-1
Federal Contractor Veterans Employment Report (VETS-100)	F-1
Year 2000 Compliance Report	A-1, B-1

When the Contract Administrator (A) is not designated above to receive a copy of a report or document, the Contractor shall furnish a copy of the report/document transmittal letter to the Contract Administrator. The Contractor shall also furnish a copy of the transmittal letter and a copy of each Financial Management Report to the delegated Administrative Contracting Officer of the cognizant DoD (or other agency) contract administrative services component.

31. STATEMENT OF WORK

1.0 Introduction

The Office of Safety and Mission Assurance (OSMA) is responsible for the development, implementation, and management of a comprehensive safety, quality and reliability program for the Center. This Statement of Work (SOW) defines contracted efforts, which support these program elements.

Within the OSMA, the Mission Assurance Office provides System Safety, Reliability, Risk Management, Software and Quality Assurance support to the LaRC Space Flight and Aeronautical projects.

The Safety and Facility Assurance Office (SFAO), plans, develops and implements assurance programs which measure and control a safe and reliable operations and provide protection of personnel and property. The SFAO ensures compliance with established programs and regulations regarding system safety, reliability, maintainability, fire protection and quality assurance.

The Receiving, Inspecting and Quality Assurance Laboratory perform material verification/certification for all safety-critical items as defined by Langley Policy documents. Perform failure analysis investigations on failed products to determine failure cause and recommend preventive/corrective action.

2.0 Scope

The contractor shall perform a variety of tasks defined through the issuance of task orders. Each order will consist of its own SOW, deliverables, period of performance, and performance metrics (which will be used to evaluate the Contractor's performance and will be the basis for determining the portion of the incentive fee to be provided). The contractor shall furnish labor, materials, equipment (other than those specified to be furnished by the Government) and management necessary to support functions essential to performing the requirements. Therefore, each task will require its own mix of skills, and a variety of types of effort may be required to accomplish a given task. Tasks will require developing an implementing product/software assurance programs for space flight and aeronautics projects, performing quality system assessments, conducting reliability and assurance engineering analysis for facility design, construction, and operations activities, and operating the Langley Research Center (LaRC) receipt inspections and quality assurance laboratory. Description of the scope and objectives for tasks in the areas of performance is as follows:

2.1 Mission Assurance Services: The work performed will consist of consulting and technical expertise for systems safety analyses, reliability, and quality assurance, design reviews, design changes, electronic parts, and capability evaluation, monitoring of product assurance efforts, produce assurance auditing, reliability analysis, analytical studies, materials and processes and data systems. for Space and Aeronautics Research and Technology (R&T) programs, projects, and products.

(a) System Safety Services: Provide system safety expertise for aerospace and earth and science projects. This includes hazard analyses, reliability analyses, and quality assurance assessments.

(b) Risk Management Services: Provide programmatic risk management expertise by applying the NASA Procedures and Guidelines 7120.5A, Continuous Risk Management process, to Center R&T programs and projects. Responsibilities include training the Center program and project personnel in how to implement risk management, including how to use risk-tracking software, and to identify existing tools that are easily available to any project manager for identification of risk, develop risk management plans and do safety and reliability risk assessments.

(c) Software Assurance Services: Develop and implement software assurance requirements and plans into Center R&T programs and projects in accordance with NASA policy for software development, NPD 2820.1, "NASA Software Policy". Provide verification and validation or independent verification and validation services, as required. Software is a critical element in a safety critical system, it is imperative to implement a systematic approach to software safety as an integral part of the overall system safety programs. The NASA-STD-8719.13A "NASA Software Safety Standard", describes the activities necessary to

ensure that safety is designed into software that is acquired or developed by NASA, and that safety is maintained throughout the software life cycle.

2.2 Fire Protection Engineering Services: Ensure that all LaRC facilities comply with the requirements of the National Fire Protection Association (NFPA), STD 8719.11; "Safety Standard for Fire Protection", LAPG 1710.11; Langley Research Center Procedures and Guidelines Fire Protection Manual, and other state and local codes. Develop protection and detection systems for unique systems that may not be in the NFPA or Factory Mutual Codes. Survey labs, hangers, office buildings, and other specialized facilities. This will include adequacy determinations of: alarm and suppression systems; means of egress; specialized heating, ventilation, air conditioning requirements; and other specialized equipment that may be specified in the codes or standards. Fire protection engineering reviews shall be performed on work orders, specifications for construction, drawing packages, and building modifications for all LaRC facilities, as well as on all fire protection equipment specifications and drawing reviews and comments. The Contractor shall respond immediately to the scene of an emergency in support the NASA Fire Chief. At the emergency scene, the contractor serves as the LaRC representative, providing necessary interface with the City of Hampton Fire Department to handle the emergency in an efficient manor. The Contractor shall coordinate with other NASA emergency operations and security forces and other mutual aid forces as required.

2.3 Safety and Facility Assurance Services: Identify, assess, and control hazards to personnel and equipment associated with the construction, modification, and operation of research facilities at the LaRC. Perform hazard analyses on a wide range of systems, including but not limited to, high-pressure, cryogenic, high-temperature, hydraulic, and high speed.

Safety methodologies to be performed includes developing undesired events lists, failure modes and effects analyses, and hazard and operability analyses. Identify recommendations to decrease the risk associated with identified hazards. These recommendations may include, but are not limited to, redesign, use of interlocks, procedures, and maintenance requirements.

Special safety and facility assurance projects will be requested such as updating/developing safety handbooks, performing special safety studies, and performing reliability analysis on a research facility and/or equipment.

2.4 Receipt Inspections and Quality Assurance Laboratory Services: Operate LaRC's Receipt Inspections and Quality Assurance Laboratory (RIQAL). Perform material verification/certification for all safety-critical items as defined by Langley Policy documents. Perform failure analysis investigations on failed products to determine failure cause and recommend preventive/corrective action.

Perform mechanical testing, chemical analysis, microscopic examination, non-destructive and destructive testing, and electrical and electronic component inspections as required to verify individual shipment items. Types of testing includes tensile testing on metal specimens and fasteners; hardness testing of a standard, superficial, and micro-hardness nature; x-ray fluorescence; micro-photography; metallographic analysis; fluorescent penetrate inspection; visual inspections; dimensional inspections; voltage testing; resistance testing; and mechanical, and assembly inspections.

Conduct sampling, equipment operation, user calibration, verification testing, material release, and material rejection in accordance with RIQAL Work Instructions.

32. The following documents are hereby attached to this contract:

Attachment A	Schedule of Rates
Attachment B	NASA Y2K Guidelines and Compliance Verification Form
Attachment C	List of Installation - Accountable Property and Services

ATTACHMENT A

SCHEDULE OF RATES BY CONTRACT YEAR
TASK ORDERS

Direct Labor Class**	Year 1	Year 2	Year 3	Year 4
	$	$	$	$
	$	$	$	$
	$	$	$	$
	$	$	$	$
	$	$	$	$
	$	$	$	$
	$	$	$	$
	$	$	$	$
	$	$	$	$
	$	$	$	$
Indirect Rates ***				
Fringe	%	%	%	%
Overhead	%	%	%	%
Material Handling	%	%	%	%
G&A	%	%	%	%

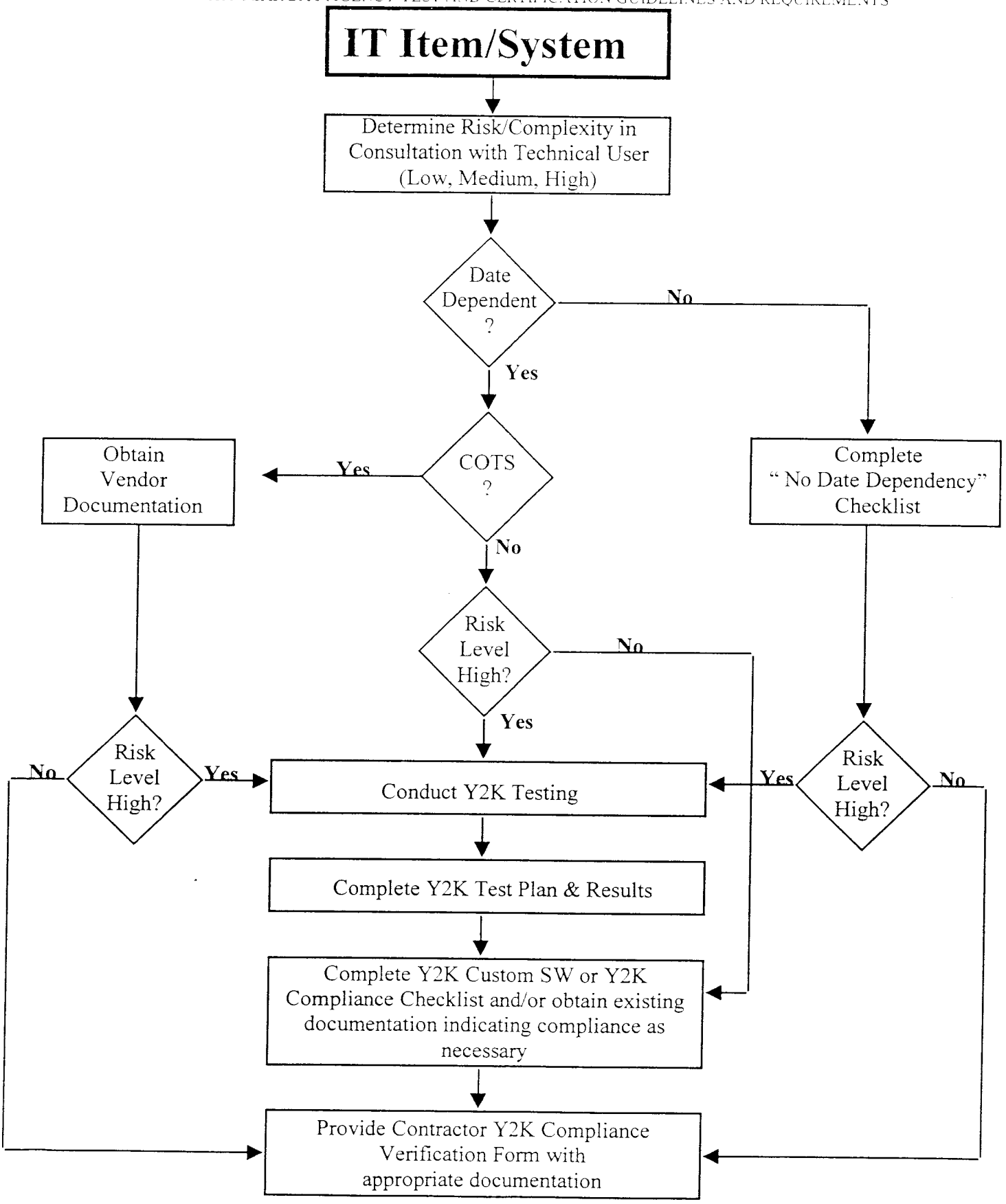
** Add other lines as necessary.

*** Put "n/a" if your established accounting system does not have a listed category as a separate indirect rate or if a rate category is not applicable to this contract. Add other indirect rates categories as applicable.

EFFECTIVE DATE OF THIS SCHEDULE _____

NASA LaRC Y2K Guideline for Documentation and Testing

BASED ON "NASA YEAR 2000 AGENCY TEST AND CERTIFICATION GUIDELINES AND REQUIREMENTS"



ATTACHMENT

Contractor Y2K Compliance Verification Form

NASA Langley Research Center

IT Item Name/System: _____ **Risk/Complexity Level** _____

Brief Description: _____ **(High, Medium, Low):**

Facility/Lab *(if applicable)*:

Organization:

Documentation (check the applicable attachments) *(Refer to the "NASA Year 2000 Agency Test and Certification Guidelines and Requirements" and the "NASA LaRC Y2K Guideline for Documentation and Testing Requirements" for guidance.)*

- ☐ "No Date Dependency" Checklist
- ☐ Vendor Documentation for COTS Products (Software, Hardware, Firmware)

  Specify: _____
- ☐ Y2K Test Plan
- ☐ Y2K Test Results
- ☐ Y2K Custom Software Compliance Checklist
- ☐ Y2K Compliance Checklist
- ☐ Other existing documentation indicating compliance, e.g. system documentation

  Specify: _____

Comments:

I certify the IT Item/System identified has been assessed for Y2K compliance using the NASA and Langley Research Center Year 2000 test and certification guidelines and requirements as guidance and that the IT Item/System is compliant as reflected in the attachments.

Contractor Company Name: _____

Contractor Official: _____ _____

Typed Name and Signature *Date*

Concurrence:

NASA COTR/Technical Monitor

_____ _____

Typed Name and Signature *Date*

Item Name	Serial Number	ECN	Manufacture	Model	Calibration Category*	Calibration Frequency	Purchase Price	Purchase Date
Tensile System								
Tester	NONE (Verified)	1258707	Tinius Olsen	None (verified)	1	Annual	$ 23,025	Apr-88
Recorder, X-Y	11493	1258708	Tinius Olsen	AD	1		$ 3,105	Apr-88
Readout, Digital	NONE (Verified)	1258709	Tinius Olsen	290	1	Annual	$ 1,240	Apr-88
Computer, Micro	23-BABWS	1258710	IBM	35-SX	NA		$ 7,000	Feb-89
Display Unit	72-4026561	1258712	IBM	8512-001	NA		$ 2,000	Feb-89
Printer, ADP	201C0652730	1258713	Okidata	GE5252A	NA		$ 1,000	Jan-89
Printer, ADP	USCC153058	1422868	HP	C2003A	NA		$ 642	Oct-90
Extensometer, Bolt Testing	164542	803480	Tinius Olsen	SB200	2		$ 3,495	Apr-88
EDAX System								
Display Unit	5028383	1259119	Sony	CPD1730	NA		$ 1,000	Oct-88
Analyzer	HX366/01	1259120	Edax	DX4	2		$ 11,870	Oct-89
X-Ray Analyzer	HX858-01	1091696	Edax	PV9814	2		$ 18,000	Dec-88
Printer, ADP	3306504286	1259121	HP	550C	NA		$ 500	Oct-89
Micro Hardness System								
Computer, Micro	FZ8QR	1879187	Dell	DCM	NA		$ 1,588	Aug-94
Tester, Hardness	3009688	1258717	Shimadzu	HMV2000	2		$ 14,700	Sep-89
Computer, Micro	FZ8QR	1879187	Dell	DCM	NA		$ 1,588	Aug-94
Tester, Hardness	91818	1091691	NewAge	NI100C	2		$ 7,250	Dec-88
Image Analysis System								
BW Camera	8073141		Hitatichi	KP-Mlek	NA			
Camera			Polaroid	Macro 5	NA			
Computer, Micro	USB3953218	1880436	HP	D5766T	NA		$ 19,167	Jan-95
Display Unit	JP83083395	1880437	HP	D2846-60501	NA		$ 900	Jan-95
Printer, ADP	AZN1123910	1880438	Canon	P930A	NA		$ 705	Jan-95
Metallograph	NMR-1017	1260189	Unitron	Versamet 3	NA		$ 11,845	Sep-88
Camera, Television	188758	1260190	Cohu	8215-2000	NA		$ 1,260	Sep-88
Microscope, Stereo	921531	1260191	Unitron	25T	NA		$ 5,000	Sep-88
Printer, ADP	AZN1123910	1880438	Canon	P930A	NA		$ 705	Jan-95
Receiver, Television	2017063	G075027	Sony	CVM1271	NA		$ 763	Jul-86
Stand, Projection	20147	G075359	Sony	VID P10	NA		$ 2,775	Apr-86
Marker/Measuring System,	4620K	1258204	Beckler	VIA 150	2		$ 3,495	Aug-89
Printer, Video	14326	1260192	Sony	UP3000	NA		$ 3,895	Sep-88
Recorder, Cassette, Video	161-30210724	1258720	Emerson	VCR3001	NA		$ 160	
Laser Thread Measurement System								
Laser	101-1194-001	1422872	Apeiron	LTMS-2P/SPI	2		$ 90,852	Oct-90
Computer, Micro	214424	1422869	PC express	None (verified)	NA		$ 3,000	Oct-90
Stand, Electronic	101-1194-001	1422870	Apeiron	LTMS-SP/SPI	NA		$ 2,000	Oct-90
Display Unit	K46-40601531	1422871	CTX	CVP5468A	NA		$ 625	Oct-90
Zyglo Penetrant Insp Unit								
Zyglo Penetrant Insp Unit	92006	1258723	Magnaflux	ZA-28W	2		$ 9,850	Jan-88
Water Filtering System	EPT9150223	1258721	Magnaflux	519719	NA		$ 5,800	Feb-90
Polishing Equip.								
Sander, Belt	497NDMT1517	1425241	Buehler	16-1290-160	NA		$ 4,980	May-91
Flaring Machine	1518	1423152	Olsen	50P	NA		$ 1,862	Nov-90
Cleaner, Ultrasonic	455-B5C-00240	1260142	Buehler	751930115	NA		$ 1,080	Feb-90
Polishing/Grinding Machin	460-E3G-1516	1260143	Buehler	49-1750-160	NA		$ 6,395	Jul-88
Polishing/Grinding Machin	451-E3G-1264	1091693	Buehler	49-1750-160	NA		$ 5,918	Dec-88
Specimen Mount Press	453-PNN-01975	1091694	Buehler	20-1390-11S	NA		$ 2,965	Dec-88
Abrasion Cutter	441MSAC037	1091695	Buehler	95C1820-260	NA		$ 9,720	Dec-88
Polishing/Grinding Machin	513PHXV10637	1432268	Buehler	49-4102-260	NA		$ 11,162	Aug-92
Specimen Mount Press	512-N35-01039	1239384	Buehler	20-1420-160	NA		$ 4,550	Sep-90
Electronics Inspection Unit								
Camera, B/W CCD	43984	35347	WATEC	Wat-902	NA		$ 2,485	Feb-91
Oscilloscope	804178	37200	Tektronix	TDS744A	NA	Annual	$ 16,241	Jul-92
Meter, RCL	563	37255	Fluke	Pm6306	1	Annual	$ 5,195	Aug-92
Generator, Function	553	37256	Fluke	Pm5150	NA	Annual	$ 4,670	Aug-90
Multimeter, Digital	5381036	1258714	Fluke	8840A	1	2 years	$ 1,095	Nov-88
Oscilloscope, Portable	211824	1258715	Protek	p2520	1	Annual	$ 489	
Multimeter, Digital	11224028	1258722	Beckman	HD110T	1	3 years	$ 229	

* Category 1 denotes equipment that requires third-party calibration via NASA. The contractor is responsible for ensuring coordination for the calibration of this equipment. Category 2 denotes equipment that requires calibration prior to use. The contractor is responsible for the calibration of this equipment in accordance with the RIQAL Work Instructions, Attachment A to Task Assignment #3.

Item Name	Serial Number	ECN	Manufacture	Model	Calibration Category*	Calibration Frequency	Purchase Price	AGE
nspection Unit (continued)								
Controller, Microprocessor	9630L-820170	1431508	Pind Tester	4501	1	Annual	$ 16,605	Aug-92
Curve Tracer	5302589	1739338	Tektronix	370A	2		$ 21,930	Sep-92
Oven, Drying	139458	1741318	Despatch	LDB1-38M	NA		$ 3,902	Feb-93
Power Supply	kr5130734A		HP	3630a	1	Annual		
Power Supply	161-11188		Beckman	1635	1	Annual		
Power Supply	Kr51307426		HP	E3630	1	Annual		
Computer, Micro	785B1	1432306	Dell	DCM	NA		$ 4,396	Aug-92
Display Unit	2003802	1432313	Dell	D2026T-AS	NA		$ 800	Aug-92
Printer	u9hc111986	1431472	HP	C3952A	NA		$ 1,498	Aug-92
Oscilloscope	B04178	37200	Tektronix	TDS744A	NA	Annual	$ 16,241	Aug-96
RCL Meter	81436	37255	Fluke	Pm6306	1	Annual	$ 5,195	Sep-96
Multimeter, Digital	5381036	1258714	Fluke	8840A	1	2 years	$ 1,095	Dec-92
Oscilloscope, Portable	211824	1258715	Protek	p2520	1	Annual	$ 489	
Multimeter, Digital	11224028	1258722	Beckman	HD110T	1	3 years	$ 229	
Generator, Function	553	37256	Fluke	Pm5150	NA	Annual	$ 4,670	Sep-94
Miscellaneous - Not Part of Single System								
Thread Gaging System	NONE	59487	Johnson	900	2		$ 2,335	Apr-89
Display Unit	90160268	1091703	Tatung	Cm1498T	NA		$ 500	Jan-93
Microscope	730	424631			NA		$ 593	
Microscope	NONE	425368	American Optical		NA		$ 547	Feb-74
Scanner, Hand Held	LU499202234	802964	Logitech	256	NA		$ 175	
Camera, B/W CCD	43984	35347	Watec	Wat-902	NA		$ 2,485	
Surface Plate, Granite	30199	1091692	Ottauing		NA		$ 3,959	Jan-93
Computer, Micro	192285	1091704	Advanced Logic	40	NA		$ 3,264	Jan-93
Printer, ADP	3126A83978	1091705	HP	Laser Jet III	NA		$ 1,559	Jan-93
Computer, Micro	3317HCG30159	1255647			NA		$ 1,563	
Camera, Still Picture	8A513738446	1258716			NA		$ 100	
Printer, ADP	3306504286	1259121	HP	550C	NA		$ 500	Nov-93
Cabinet, Medical	NONE (Verified)	1261094	Blickman	None (verified)	NA		$ 1,290	Mar-94
Cabinet, Medical	NONE (Verified)	1261095	Blickman	None (verified)	NA		$ 1,290	Mar-94
Computer, Micro	23WVG03	1424323	IBM	433sx	NA		$ 3,100	Mar-95
Display Unit	1240809341	1424324	Compudine		NA		$ 400	
Microscope, Electron	D605	1428112	Philips	SEM505	NA		$ 96,000	Jan-96
Display Unit	S453A1V55R4	1431417	Apple	M1822	NA		$ 1,498	Jun-96
Printer	USHC111886	1431472	HP	C3952A	NA		$ 1,498	Sep-96
Computer, Micro	xb6200my7p4	1741138	Apple	M3409	NA		$ 3,322	Feb-97
Gage, Height	259	1878148	Starret	None (verified)	NA		$ 2,690	Jul-98
Display Unit	8300986	1879188	Dell	Tritron	NA		$ 500	
Stereo Scope	944059		Unitron	2SB	NA			

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	Serial Number	ECN
Pager-Fire Protection	AG5BAA BZE48K3	
Radio-Fire Protection		37871
Radio-Fire Protection		35082

The above items (applicable to the RIQAL and Fire Protection) are part of a Government equipped facility, therefore, these items are not to be replaced by the contractor.