AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF	PAGES
	1		2

2. AMENDMENT/MODIFICAITON NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicble)
0007	03/18/05		

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than Item 6)	CODE
CONTRACTING OFFICER NAVAL RESEARCH LABORATORY 4555 OVERLOOK AVENUE, SW WASHINGTON, DC 20375-5326 ATTN: CODE 3220	N00173		

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)	(X)	9A. AMENDMENT OF SOLICIATION NO.
TO ALL OFFERORS	✘	N00173-05-R-JS02
		9B. DATED (SEE ITEM 11) 12/09/04
		10A. MODIFICATION OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 11)
CODE / FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a)By completing items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment your desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPIRATION DATA (If required)

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE	
	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

SEE PAGE 2

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
15B. CONTRACTOR/OFFEROR (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA (Signature of Contracting Officer)	16C. DATE SIGNED

The purpose of this amendment is to further clarify information regarding a second site visit and to provide answers to questions received from potential offerors.

1. The purpose of the second site visit, scheduled March 24, 2005, 10:00 am, is to provide offeror's with an explanation of NRL's requirement and to provide an opportunity to submit written questions concerning the requirements of this Request for Proposal. Offerors shall be advised that (1) Remarks and explanations at the site visit shall not qualify the terms of the solicitation, (2) Terms of the solicitation and specifications shall remain unchanged unless the solicitation is amended in writing and (3) All questions or concerns should be written in question format and may be addressed the day of the site visit or later in a follow-up amendment.

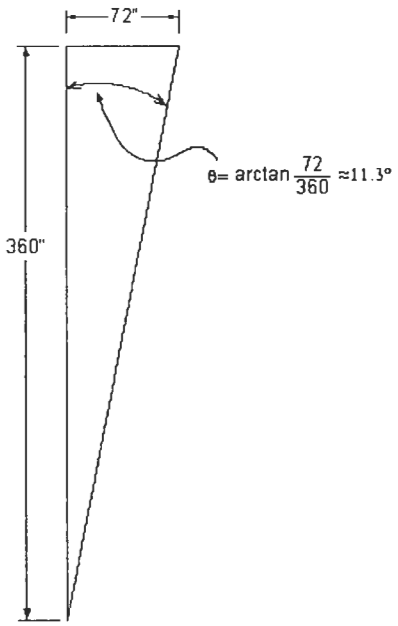
2. The following information is provided as follows:

   Q: Attachment 1
   A: The data in Figure 1 is not a one for one direct translation from positioner to plotter. The plotter data is the best I think can be had using commercial components. The monitor is not intended to control the plotter except in a local input mode. When the system is on line the 10 volt drive comes from an extraneous computer hence the system monitor just identifies the reaction of the plotter.

Attachment (1) – Questions from Potential Offeror's – 2 Pages

SOLICITATION NO.: N00173-05-R-JS02
AMENDMENT NO.: 0007
ATTACHMENT (1)

While reviewing the Specifications for the Low-Power Anechoic Chamber Target System Design, we observed a few discrepancies therein, associated both with the performance requirements and sufficient system definition. Since the specification should govern the requirements NRL is placing on the subject X-Y plotter — as well as the rotary Horn Positioner — we request clarification,



$$radian := \frac{360}{2 \cdot 3.14159}$$

$$theta := atan\left(\frac{72}{360}\right) \cdot radian$$

$$one\_degree := \frac{72}{theta}$$

$$two\_arcsec := 2 \cdot \frac{one\_degree}{3600}$$

$$pt2\_arcsec := 0.1 \cdot two\_arcsec$$

$$pt004\_degree := .004\, one\_degree$$

$$one\_hundred\_degpersec := 100\, one\_degree$$

$$fourtwenty\_degpersec2 := 420\, one\_degree$$

theta = 11.31	degrees
one_degree = 6.366	inches
two_arcsec = 3.537×10^{-3}	inches
pt004_degree = 0.025	inches
pt2_arcsec = 3.537×10^{-4}	inches
one_hundred_degpersec = 636.608	inches per second
fourtwenty_degpersec2 = 2.674×10^{3}	inches per second per second

Figure 1. Mathcad Angular-to-Linear Translations

Figure 1 shows a Mathcad document we produced to derive the trigonometric translations of angular versus linear motion, based on the Positioner Data specifications. It shows that, while the translation for Elevation and Azimuth accuracy and repeatability — where 2 arc-seconds corresponds to 0.0035 inches and 0.2 arc-seconds corresponds to 0.00035 inches — agree with the NRL translations, several of the other translations appear to be in error. Table 1 compares the Mathcad translation results with those identified in the NRL specifications. Can NRL clarify these discrepancies?

Positioner Data Item	Specified Angular Requirements	NRL X-Y Plotter translation	Mathcad X-Y Plotter translation
Elevation & Azimuth Accuracy	2 arc-seconds	0.004"	0.0036"
Elevation & Azimuth Resolution	0.004°	0.0025"	0.025"
Elevation & Azimuth Repeatability	0.2 arc-seconds	0.0004"	0.00035"
Elevation & Azimuth Rate Data Range	0-to-100°/sec	0-to-314"/sec	0-to-637"/sec
Elevation& Azimuth Rate Accuracy	0.4%	2.5"/sec	5.1"/sec
Elevation & Azimuth Resolution	0.002°/sec	0.01"/sec	0.013"/sec
Elevation & Azimuth Acceleration	420-to-1250°/sec²	501-to-1276"/sec²	2674-to-7958"/sec²

We would also like NRL to clarify the requirements for how it intends to control — and monitor — the subject equipment. Page 8 of the Specification describes a Positioner-Computer-Plotter interface. The specified ±10 volt range and 4.88 millivolt resolution of the digital-to-analog output(s) is equivalent to 12-bit precision, which provides a corresponding resolution of one part in 4096. However, the specified position and rate resolution requirements exceed this resolution. That is, even if we limit the total position "operating range" of the X- and Y-axes to ±10°, a position resolution of 0.004° is equivalent to one part in 5000. And, with a full-scale velocity of (plus and minus) 100°/sec, a resolution of 0.002°/sec is equivalent to one part in 100,000, which is in excess of 16 bits!

Moreover, the specification appears to address the control aspect for the system, which relies on the digital-to-analog converters, but does not discuss any requirements for monitoring or "reading back" axis position, rate, or other system status. Is it NRL's intent that this be command-only interface? If so, how does NRL intend to accommodate system faults, if and when they occur?