

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>	1. CONTRACT ID CODE	PAGE OF PAGES
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2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. (If applicable)
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6. ISSUED BY CODE	7. ADMINISTERED BY (If other than Item 6) CODE
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8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)	(X)	9A. AMENDMENT OF SOLICITATION NO.
		9B. DATED (SEE ITEM 11)
		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 APPROPRIATION 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.)

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 extend the solicitation due date, provide answers to questions received from potential offerors and to provide additional information.

The hour and date specified for receipt of offers is extended to March 11, 2005.

1. Q: As previously asked in Amendment 0004, question 9 (a), what is the shortest distance in the fastest time that must be traveled and the time it takes to do so?  
A: 0.07 inches, 210 in/sec average
2. Q: As previously asked in Amendment 0004, question 9 (b), what is the shortest distance in the longest time needed to travel and the time it takes to do so?  
A: 120". 120 sec
3. Q: Is the rotational stage for the horn part of the specification, or does that already exist and do we need to provide a means of attaching it?  
A: The rotational stage for the horn does not exist and is to be provided. Only the horn exists.

Additional information is provided as follows:

The system does not start at one end with zero velocity and run at over 200 in per sec for 120". The motion of the horn usually starts slowly and increases exponentially as the end of the working area is reached. Hence the very high speed is needed only then.

The following information is provided to clarify the specifications and all amendments:

4. Q: Since the distance of 0.07" inches must be traversed at an averaged speed, the time to traverse is:

$$t_{traverse} = \frac{\delta}{V_{average}} = \frac{0.07"}{210"/sec} = 0.00033 \text{ sec} = 0.33 \text{ ms}$$

Assuming that the system is at rest and that the velocity at the end of the travel can be non-zero, the required acceleration is from:

$$\delta = ut + \frac{1}{2} a_{Required} t_{traverse}^2 = \frac{1}{2} a_{Required} t_{traverse}^2$$

$$a_{Required} = \frac{2\delta}{t_{traverse}^2} = \frac{2 \times 0.07"}{(0.00033 \text{ sec})^2} = 630,000 \text{ inch} / s^2$$

This is unreasonable. If a half sine is as the profile to achieve the desired travel at an averaged speed of 210 inch/sec with zero end-velocity, the result is even worse.

From 
$$a_{Required} = A\omega^2 = \frac{0.07''}{2} x \left( \frac{2\pi}{0.00033 * 2} \right)^2 = 3,171,862 \text{ inch} / s^2$$

A: The system is never at rest and is expected to meet the minimum distance/maximum speed condition.

5. Q: If the answer is 120" in 0.12 seconds, the required acceleration is:

$$a_{Required} = \frac{2\delta}{t_{traverse}^2} = \frac{2x120''}{(0.12)^2} = 16,667 \text{ inch} / s^2$$

This is again unreasonable and well above the stated maximum acceleration required in the RFQ (1,276 inc/sec/sec).

A: The normal test begins slowly and for the last few seconds may be at high speed. We never travel end to end at max speed. We have no test condition requiring 120" in 0.120 seconds.

6. Q: Given the answer "Classified" is it acceptable to assume that the reviewers will not penalize designs that are considered noisy? Or should the proposal discuss why the proposed system offers advantages in terms of emitted noise?

A: In the chamber we have RF noise. However, we are not concerned with acoustical noise. Our range of interest is in the micro-wave area, 1GHz or above.

7. Q: Verify answer in Question 9b. Is it .120 sec or 120 sec?

A: 120 seconds

8. Q: NRL must specify how accurately the system must track an input command. Since answer to Question 5 in Amendment 0004, states that the motion will include "Home, point to point and loop." How accurate should the system be able to track the commanded loop? How fast must the system settle during a point to point movement.

A: The system should be able to track the commanded loop within the accuracy of the Macron system (see Specifications (Revised 20041210), page 1, right side of Table 1) from the analogue signal. When moving to Home or in a point to point mode settling time is not significant but should be reasonable.

9. Q: From the RFQ the horn rotator is "slaved" to the X-Y stage motion in that it must always point to the center point of the crossing of the positioners horizontal and vertical axes. During movement what is the accuracy required from the horn rotator.

A: The horn accuracy must be equivalent to that of the positioner.

10. Q: How will the horn be aligned to the center point?

A: The horn alignment will be laser.

11. Q: In regards to question #12 of amendment 0004, given the original required acceleration and velocity parameters (501-1276 & 0-314) respectfully, if I calculate your required speed over this distance, the following results are:

Given our standard D/VT formula table Distance Traveled/Velocity wanted =  
Time = .000333s

Given our standard acceleration formula, Delta V/Time wanted = acceleration  
= 630,630.630 in/sec/sec

Assuming starting velocity = 0 for each move initiated for either loop or  
continuous moves, each move making up a segment or part of the loop or  
continuous command.

Is this requirement (.07" at 210" /sec) correct? And how was this  
specification derived?

Why is this amount of acceleration needed over the original specified amount?  
Obviously this represents a 494.00% increase in required acceleration over  
your original specification of 0-1276 in/sec/sec.

A. The assumption in the calculation in this question is that we are starting with  
zero velocity, which is not correct. Typical profiles begin very slowly and  
increase gradually to a short but rapid finish.

12. Q: With regards to question #9 in amendment 0004, if the max move is 120" and  
the time you are specifying is .120 sec (120m/s) to make that move, the  
following results are:

Given our standard D/VT formula table Distance Traveled/Time wanted =  
velocity = 1000 in/sec.

Given standard acceleration formula, Delta V/Time wanted = acceleration =  
8,333.33 in/sec/sec

Is the requirement (120" in .120 sec) correct? And how long was this  
specification derived?

Why is this amount of acceleration needed over the original specified amount?

A: The time specified was not .120 seconds for a max move of 120". The max  
time could be as much as 120 seconds. As stated above for question 1, we  
start slow but end fast.

13. Q: Is the positioner velocity and acceleration with the positioner fully loaded or with the positioner un-loaded? If those values are with the positioner unloaded, what will be the values with the positioner 10% loaded, 50% loaded, 100% loaded etc. The positioner that the NAVY purchased is what we assume is just a positioner, in other words it will position something that you attach to it. We assume that the positioner was purchased to operate at a specific velocity with a specific load (mass), but the positioner may or may not have come with a load, ie a missile, etc from the manufacturer. If something was supposed to be attached to the positioner to be "positioned", then the velocity and the acceleration of the positioner from the manufacturer should be a range as indicated in the original specs, 0-314 "/sec and 501-1276 in/sec/sec. If the manufacturer has specified a range, then we assume that the positioner is designed to "position" or carry varying devices of various sizes and weights, the weight or mass having the primary effect on the velocity and acceleration of the positioner, hence the operating range as previously noted. If this is the case, what is the velocity and acceleration of the positioner when it is loaded (10% i.e 75 lb, 25% i.e 125lb, 50% etc. up to 100%) while carrying a device to be "positioned". The loading means the amount of weight (mass) min. and max. that the positioner can move and still operate within it's specified velocity and acceleration range, or the specified mass the positioner can carry min. & max. as specified by the manufacturer.

A: Loading and unloaded are in the specifications. In table 1, it is given that the acceleration rates, which are said to be load dependent, the heavier the load the slower the acceleration. Data and weights cannot be provided and are unimportant to the design of the x-y plotter. The positioners maximum capability was translated to the plotters but is not relevant to the plotter performance, loaded or unloaded. The plotter once started, moves slowly with ever increasing speed, the maximum of which may require it to move 0.07 and average velocity of 210"/sec at the end of a run.

14. Q: Are you aware that Macron has backed off it's published specifications and has doubled the weight, pulley size etc. of the actuators you referred to in the RFP? If the Macron #14 & #6 was the basis of your design and calculations, have you taken into account the new parameters that Macron is giving all of the bidders?

A: Refer to Specifications (Revised 20041210), page 1, right side of Table 1

15. Q: For each move completed, either continuous or a single loop, there might be a dwell time associated with each or between move. Does the Navy have any specifications as to the minimum or maximum dwell times?

A: No