

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT	1. CONTRACT ID CODE N00173	PAGE OF PAGES 1 2
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2. AMENDMENT/MODIFICATION NO. 0001	3. EFFECTIVE DATE 02/18/11	4. REQUISITION/PURCHASE REQ. NO. 82-1030-11	5. PROJECT NO. (If applicable)
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6. ISSUED BY Naval Research Laboratory Contracting Division 4555 Overlook Ave, SW Washington, DC 20375 ATTN: Code 3230.KS	CODE N00173	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) TO ALL OFFERORS	(X)	9A. AMENDMENT OF SOLICITATION NO. N00173-11-R-KS02
		9B. DATED (SEE ITEM 11) 02/03/11
		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 1 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 answer questions asked by a potential offeror and to revise the specifications.

1. Question: Addendum #2 asks to quote optional field supply for the three shakers listed. Please confirm, is it one new supply per shaker (3 total) or one new supply that can drive any of the three shakers?

Answer: One new supply that can drive the field requirements for the Ling Shakers listed in the RFP.

2. Question: What is the meaning of addendum #4: "interconnection through existing switcher." Please provide detail on what exactly is to be quoted.

Answer: The existing switcher has all the terminations of all the shakers' interconnects, armature, and field relays. The new amplifier must terminate its Power amplifier, and Field output, and shaker interconnect monitoring at the switcher interface. Schematics will be provided by request to kirsten.pilkerton@nrl.navy.mil via email.

3. Question: Will ATP take place at NRL after amplifier delivery or at vendor factory prior to shipment?

Answer: Vendor facility shall show full capability. After installation at NRL, the vendor shall demonstrate power amplifier and/or Field capability for all interconnected shakers through existing Ling Switching Unit, and demonstrate all shaker interlocks and safety interlocks for all shakers.

4. The specifications are revised to remove Addendum 4 and the availability to submit Alternate Proposals. The revised specifications are attached to this amendment.

Specifications
AMPLIFIER SYSTEM

BACKGROUND

Naval Research Lab's (NRL) payload checkout facility's vibration lab is responsible for testing spacecraft structures and components. The vibration lab has four shakers, three amplifiers, three field supplies, and three cooling units, all of which can be interconnected through a switching unit to cross various components of the system. We are going to replace one of our existing Ling 8096 Amplifiers.

SPECIFICATION

- 1) The Amplifier shall be of sufficient power to drive (direct coupled) the shakers listed in Table 1 to full force rating (Sine, random, and Shock) across a usable frequency range from 2-2000Hz

Table 1

	Ling B335	Ling 2022	Ling 4022
Effective frequency range	5 Hz to 2000 Hz	5 Hz to 2000 Hz	5 Hz to 2000 Hz
Rated force, sine	18,000 lbs pk	18,000 lbs pk	30,000 lbs pk
Rated force, random	16,000 lbs rms	16,000 lbs rms	30,000 lbs rms
Rated velocity	70 in/s	70 in/s	70 in/s
Rated displacement P-P	1 in	2 in	2 in
Rated displacement Shock	1in	1.5 in	1.5 in
Maximum acceleration Sine	150 g	150 g	100 g

* Random ratings are wide-band 20 – 2000 Hz, 3-sigma acceleration peaks, uniform spectral density, with loads of 800 lbs or greater.

- 2) Amplifier shall be a air cooled, solid state digital switching amplifier using superior efficiency of IGBT devices (minimum 90% efficient)
- 3) The output level of the amplifier shall not be less than 240 KVA
- 4) Amplifier shall consist of easily removable power modules, each with a minimum power output of 30 KVA. The amplifier shall be capable of operating at reduced power levels with one or more power modules bypassed.
- 5) The frequency response shall be flat (+/- 1 dB) from 10 to 2000 Hz. The amplifier shall be capable of driving the existing shaker across its full effective frequency range (5 to 2000 Hz).
- 6) At full rated output, the acceleration harmonic distortion at the shaker shall be less than 15% from 5 Hz to 2000 Hz except for 2 peaks <25%.

- 7) System Safety Interlocks: The amplifier shall contain the necessary hardware to implement a safety interlock system fully integrated with the shaker and slip table. Interlocks shall be provided to shut the system down if any of the following conditions are present:
- Shaker stroke limit exceeded
 - Shaker maximum operating temperature exceeded
 - Slip table oil pressure failure
 - Shaker oil pressure failure
 - Cooling system limits exceeded
 - Shaker field supply failure
 - Amplifier current limit exceeded (user selectable to any level at or below the rated amplifier current)
 - Amplifier voltage limit exceeded (user selectable to any level at or below the rated amplifier voltage)
 - Amplifier maximum operating temperature
- 8) Amplifier shall have fast acting shutdown circuitry
- 9) Field Supply shall be de-energized when Safety interlock circuitry has detected out of limits condition
- 10) Amplifier shall have adjustable soft-shutdown limits
- 11) Amplifier shall have a startup, status, and diagnostic panel including: 1) Amplifier and shaker safety interlock display 2) Amplifier gain control 3) Automatic input signal detection circuitry for establishing voltage and current limits 4) Sequence/status pushbuttons for system startup, local and remote operation
- 12) Amplifier shall be able to be started from a remote location (Remote Panel).
- 13) Amplifier shall have local and remote armature voltage & current meters, and field voltage & current meters.
- 14) Amplifier shall be able to drive existing 1) Ling 335 2) Ling 2022 3) Ling 4022 shakers through an existing switching amplifier at NRLs facility, utilizing existing field supplies.
- 15) Amplifier remote interface cables shall be minimum 50feet(estimated) in length
- 16) Existing Amplifier cabling may be utilized for New Amplifier (armature, interlock) to Switcher connections
- 17) Contractor shall provide 5 copies of the following: installation drawings of shaker and amplifier service requirements including electrical power, water, and heat dissipation systems prior to shipment of amplifier and shaker. Floor layout and utility shall also be included.
- 18) Contractor shall provide 5 copies of the following: operation and maintenance procedures, schematics, and assembly and installation drawings of shaker and amplifier, at time of commissioning.
- 19) Contractor shall provide a minimum of three days training on operation of system, and field troubleshooting, and diagnosis of failure modes of system at time of commissioning.

- 20) Contractor shall install & commission system described to include alignment, securing, all service connections (excluding main power service), and operational test.
- 21) The Contractor shall provide a standard commercial warranty to protect against manufacturing defects in material or workmanship.

Addendum

The final product is the ability to interconnect required amplifier, or field supply or cooling unit to selected shaker to minimize down time in the case of a component failure of the system.

- 1) Options shall be quoted for cabling from Amplifier (i.e. Armature, and Interlock wiring) to Switching unit (Estimated 30 feet)
- 2) Options shall be quoted for Field Supply for Shakers listed in Table 1.
- 3) Options shall be quoted for an extended warranty period beyond the standard warranty.
- 4) The COR shall be informed of all Acceptance Test Program (ATP) testing on major hardware items, and shall be able to witness ATP testing on all major hardware.
- 5) Site visit on 2 March 2011. Instructions for attending are located in the Combined Synopsis/Solicitation.