

Special Notice 13-SN-0014

Special Program Announcement for 2013 Office of Naval Research

“Ground-Based Air Defense Directed Energy On-The-Move”

The purpose of Amendment 0001 to this Special Notice is to extend the full proposal submission date as indicated in Sections VI and VII. Changes are annotated in bold. Correction to transposed values in HEL E-O measurements in Section II, Research Areas, (1)a.

I. INTRODUCTION:

This announcement describes an advanced technology development opportunity, entitled Ground-Based Air Defense (GBAD) Directed Energy (DE) On-The-Move (OTM), to be launched under the ONRBAA13-001, “Long Range Broad Agency Announcement (BAA) for Navy and Marine Corps Science and Technology”, found at <http://www.onr.navy.mil/Contracts-Grants/Funding-Opportunities/Broad-Agency-Announcements.aspx>. The opportunity described in this announcement specifically falls under the numbered paragraph 3, Force Protection (Code 30). The submission of proposals, their evaluation, and the placement of contracts and/or grants will be carried out as described in the Broad Agency Announcement.

The purpose of this announcement is to focus attention of the scientific community on (1) the areas to be studied, and (2) the planned timetable for the submission of white papers and proposals.

II. TOPIC DESCRIPTION

GBAD DE OTM

Sought by this announcement are potential performers to provide novel subsystems and components in support of the GBAD DE OTM Future Naval Capability (FNC). This FNC will demonstrate a vehicle-mounted on-the-move short-range air-defense laser system to defeat Low Observable/Low Radar Cross Section (LO/LRCS) threats to a Marine Corps Air-Ground Task Force (MAGTF). Shortfalls of the Marine Corps’ current low-altitude air-defense program of record have been identified with the advent of new threats, specifically Unmanned Aerial Systems (UASs). Threat UASs may have surveillance weapon payloads. The need for a new expeditionary mobile air-defense weapon with improved effectiveness has been identified. GBAD DE OTM will provide close-in, low-altitude, surface-to-air weapons fire in defense of MAGTF assets against LO/LRCS threats. GBAD DE OTM’s mission is to prevent reconnaissance, surveillance, targeting, and engagement of expeditionary forces.

Research Areas:

The GBAD DE OTM system will nominally consist of three subsystems mounted on a light tactical vehicle (objective platform of JLTV with interim demonstrations on M1152A1 HMMWV): Volume-Surveillance Radar, Command and Control (C2), and a High-Energy Laser (HEL) Weapon. While ONR and many government agencies have invested in research and development of all three subsystems and their related components, no systems currently exist which satisfy all of the requirements of this FNC. This announcement aims to identify, develop, and mature novel key components and subsystems that significantly improve upon state-of-the-art performance along with additional key considerations of: reductions in size, weight, and power consumption, and on-the-move capability. ONR Code 30, Force Protection Thrust is soliciting FY13 6.3 Advanced Technology Development topics to pursue, exploit, and mature technology in the following areas:

- (1) M1152A1 HMMWV-Mounted mobile/expeditionary/on-the-move Laser Weapon System with lasing profile including full-power lasing for up to 120 seconds followed by a 20 minute recharge to 80% of total capacity (power and thermal) - this lasing period is cumulative between recharges, and may be continuous. Laser Weapon System total weight not to exceed 2,500 lbs., and fully contained within vehicle's cargo area, including:
 - a. HEL Source – compact (inclusive of all equipment required to operate laser source), rugged (able to survive and operate in and after transit through operationally relevant environments), high efficiency and good beam quality laser (greater than 20% electrical-to-optical within a **2.5 (Threshold) to 2.0 (objective)** times lambda/D circumscribed diameter circular bucket) with minimum optical output power of 25kW. Approaches for combining lower power lasers within the above constraints as well as options to increase power (up to 50kW) are also of interest.
 - b. Beam Director – compact, lightweight, rugged, capable of handling a 50 kW beam, approximately 30 cm aperture, and capable of maintaining the beam on a selected aim point on target at range with less than 5 μ rad jitter RMS and 3 μ rad/s drift; including environmental coatings and seals and exit aperture protection in all USMC environments spanning littoral to desert environments.
 - c. Beam Control – hardware, techniques, and processing systems for improved reduction of base movement, including but not limited to advanced fast steering mirrors; automated internal alignment system to include alignment of sub-aperture beams and shared aperture imaging systems.
 - d. Adaptive Optics – novel and innovative approaches and solutions for compact adaptive optics capable of handling a 50kW beam that will sense and correct atmospheric effects resulting from USMC environmental conditions.
 - e. Atmospheric Characterization and Tactical Decision Aid: approaches to detect/measure atmospheric conditions and support predictions of HEL performance.

- f. Thermal Storage and Management – capable of removing waste heat from the laser commensurate with power and efficiencies mentioned above.
 - g. Power Generation, Storage, and Conditioning – rugged, compact solutions capable of supplying continuous clean stable power to the laser during firing commensurate with power and efficiencies mentioned above. For batteries, cooling capability to mitigate thermal effects is also of interest.
 - h. Weapon Station Controls and Displays – single user interface console providing full weapon system control including system health monitoring.
 - i. Long Range EO/IR optics – novel, innovative or improved optics and imaging systems/subsystems to support enhanced Combat ID.
- (2) Light Tactical Vehicle-Mounted Command, Control and Communications (C3) – mobile/expeditionary/on-the-move command, control, and communications required to integrate elements of the GBAD FNC to include high-quality stills and/or video imagery, and fire-control quality data (including target position data to permit acquisition of target with local sensors) with ability to minimize latency and support Quality of Service (QoS).
- (3) Light Tactical Vehicle-Mounted Volume Surveillance Radar – mobile/expeditionary/on-the-move radar system capable of detecting and tracking targets of interest at operationally relevant ranges with acceptable false alarm rates.

Note: The intent is not to procure or develop the HEL Weapon System as part of this Special Notice, but to focus on the research and development of components mentioned above which may be integrated into a HEL Weapon system by the US Government. In addition, solutions that address all or portions of the above topic areas are of interest.

The thrust will also consider any other innovative concepts and technologies that can significantly improve GBAD DE OTM capabilities and performance beyond the areas listed above.

III. WHITE PAPER SUBMISSION

Although not required, white papers are strongly encouraged for all offerors seeking funding. Each white paper will be evaluated by the Government to determine whether the technology advancement proposed appears to be of particular value to the Department of the Navy. Initial Government evaluations and feedback will be issued via e-mail notification from the Technical Point of Contact. The initial white paper appraisal is intended to give entities a sense of whether their concepts are likely to be funded.

Detailed Full Proposal (Technical and Cost volumes) will be subsequently encouraged from those Offerors whose proposed technologies have been identified through the above referenced e-mail as being of “particular value” to the Government. However, any such encouragement does not assure a subsequent award. Full Proposals may also be submitted by any offeror whose white paper was

not identified as being of particular value to the Government or any offeror who did not submit a white paper.

For white papers that propose efforts that are considered of particular value to the Navy but either exceed available budgets or contain certain tasks or applications that are not desired by the Navy, ONR may suggest a full proposal with reduced effort to fit within expected available budgets or an effort that refocuses the tasks or application of the technology to maximize the benefit to the Navy.

White papers should not exceed 4 single-sided pages, exclusive of cover page and resume of principal investigator, and should be in 12-point Times New Roman font with margins not less than one inch.

The cover page should be labeled "White Paper for 2013 Ground-Based Air Defense Directed Energy On The Move" and include the following information: title of the proposed effort, technical point of contact, telephone number, fax numbers, and e-mail address.

The 4-page body of the white paper should include the following information:

- (1) Principal Investigator;
- (2) Relevance of the proposed effort to the research areas described in Section II;
- (3) Technical objective of the proposed effort;
- (4) Technical approach that will be pursued to meet the objective;
- (5) A summary of recent relevant technical breakthroughs; and
- (6) A funding plan showing requested funding per fiscal year.

A resume of the principal investigator, not to exceed 1 page, should also be included after the 4-page body of the white paper.

White papers should be submitted electronically to the program technical points of contact, Lee Mastroianni and Mr. Stuart Shoppell. Files exceeding 10MB in size should not be emailed, but instead transmitted via a file transfer service, for example AMRDEC Safesite, <https://safe.amrde.army.mil>, or mailed on CDROM or DVD. White papers shall be in Adobe PDF format (preferred) or in Microsoft Word format compatible with MS Office 2007.

To ensure full, timely consideration for funding, white papers should be submitted **no later than 2:00 PM Eastern Daylight Time (EDT) on 26 Apr 2013**. White papers received after that date will be considered as time and availability of funding permit.

The planned date for completing the review of white papers is **09 May 2013**.

VI. FULL PROPOSAL SUBMISSION AND AWARD INFORMATION

Full proposals (including one (1) technical volume and one (1) cost volume) should be submitted under ONRBAA13-001 by **9:00 AM Eastern Daylight time (EDT) on 17 June 2013**. Full Proposals

under this Announcement received after that date will be considered as time and availability of funding permit.

ONR anticipates that grants/contracts will be issued for this effort. Full Proposals for contracts should be submitted in accordance with the instructions in the ONRBAA 13-001 at Section IV, Application and Submission Information, item 2.b, Full Proposals. Full proposals for grants should be submitted in accordance with the instructions at Section IV, Application and Submission Information, item 5, Submission of Grant Proposals through Grants.gov. All full proposals for grants must be submitted through www.grants.gov. The following information must be completed as follows in the SF 424 to ensure that the application is directed to the correct individual for review: Block 4a, In the "Federal Identifier" field, all offerors should insert "N00014". Block 4b, Agency Routing Number, Enter the Program Office (Code 30) and the Program Officer's name, last name, first name in brackets ("[Mastroianni, Lee]"). All attachments to the application should also include this identifier to ensure the proposal and its attachments are received by the appropriate Program Office.

ONR plans to fund multiple awards up to \$400K per year under 6.3 Advanced Technology Development; however, proposals outside of this cost range will be considered. The period of performance for projects may be up to four years.

Funding decisions should be made by **08 July 2013**. Grant Projects will have an estimated award date on or about 01 September 2013. Contract Projects will have an estimated award date of January 2014.

VII. SIGNIFICANT DATES AND TIMES

Event / Dates / Times

White Paper Submission Date: 26 Apr 2013 2:00 PM EDT

Recommendation for full proposal Date: 9 May 2013 2:00 PM EDT *

Full Proposal Submission Date: 17 June 2013 9:00 AM EDT

Awards: September 01 2013 *

Note:* These are approximate dates.

VIII. POINTS OF CONTACT

In addition to the points of contact listed in ONRBAA13-001, the specific points of contact for this announcement are listed below:

Technical Points of Contact:

Mr. Lee Mastroianni, Program Officer, lee.mastroianni@navy.mil

Mr. Stuart Shoppell, Project Manager, stuart.shoppell@navy.mil

Business Point of Contact:

Mr. Frank Kennedy, Contract Specialist, frank.j.kennedy@navy.mil

IX. Submission of Questions

Any questions regarding this announcement must be provided to the Technical Points of Contact and/or the Business Point of Contact listed above. All questions shall be submitted in writing by electronic mail.

Answers to questions submitted in response to this Special Notice will be addressed in the form of an Amendment and will be posted to the following web pages:

- Federal Business Opportunities (FEDBIZOPPS) Webpage – <https://www.fbo.gov/>
- Grants.gov Webpage – <http://www.grants.gov/>
- ONR Special Notice Webpage - <http://www.onr.navy.mil/Contracts-Grants/Funding-Opportunities/Special-Notices.aspx>

Questions regarding **White Papers or Full Proposals** should be submitted NLT two weeks before the dates recommended for receipt of White Papers and/or Full Proposals. Questions after this date may not be answered.