

Special Notice 12-SN-0017
Special Program Announcement for 2012 Office of Naval Research
Research Opportunity:
“Hyper Velocity Projectile (HVP) Research”

I. INTRODUCTION:

This announcement describes a research thrust, entitled “Hyper Velocity Projectile (HVP) Research” to be conducted under the ONR BAA12-001, Long Range Broad Agency Announcement for Navy and Marine Corps Science and Technology which can be found at <http://www.onr.navy.mil/Contracts-Grants/Funding-Opportunities/Broad-Agency-Announcements.aspx>. The research opportunity described in this announcement specifically falls under numbered paragraph one (1) of the Sub-Section Naval Air Warfare and Weapons (Code 35). The submission of white papers, proposals, their evaluation and the placement of research contracts will be carried out as described in that Broad Agency Announcement.

The purpose of this announcement is to focus attention of the scientific community on (1) the area to be studied, (2) industry day for dialogue amongst those interested in this area, and (3) the planned timetable for the submission of white papers, oral presentations, and proposals.

II. TOPIC DESCRIPTION:

The proposed topic will explore technologies related to extended range guided projectiles for Naval Surface Fire Support (NSFS) and exploit recent advances in miniaturized electronics, guided projectiles and mortars, and warhead technology for small UAV launched munitions. The program will pursue a modular approach that will facilitate meeting performance characteristics of both conventional guns (Mk 45 5” and 155mm Advanced Gun System and 155-mm field artillery) and future EM (Electromagnetic) railgun designs. In addition to gun system compatibility requirements, projectile designs and technologies must also provide commonality to meet multiple mission requirements in the areas of Naval Surface Fire Support (to include potential in-flight retargeting), Cruise Missile Defense, and Anti-Surface Warfare, and support future requirements for additional mission areas. The design may also incorporate datalinks or other technologies that will facilitate the other mission areas.

Background: Improvements to the Navy’s Naval Surface Fire Support capabilities have been a long standing Department of the Navy need. The high velocities achieved by sub-caliber projectile designs relieve the need for a rocket motor to extend gun range. Firing smaller more accurate rounds relieves danger close and collateral damage constraints and provides potential for deeper magazines and improved shipboard safety. Elimination of the rocket motor also reduces the total cost of the projectile. Continued advancement in the state-of-the-art of high G electronic packaging and control systems in a small form factor are required to implement the desired concept. Innovative approaches that reduce the unit cost are necessary to ensure round costs permit acquisition of sufficient quantities to address USMC volume fire capability gaps. Additional technical data will be provided during the industry day proceedings described below.

Objective: The Hyper Velocity Projectile (HVP) program is intended to design, develop, fabricate, test and demonstrate a guided hypervelocity projectile compatible with Mk 45, 155mm gun systems and future 20 – 32MJ railgun systems. Due to Mk 45 interface requirements, the HVP shall be a 62 cm long subcaliber sabot round. Desired total airframe mass is in the 10-15 kg range. Designs and technologies must survive and perform through harsh environments; 20,000 – 30,000 G's launch acceleration and (for railgun) thermal conditions intrinsic with sea level, 2 km/s guided flight. Desired ranges include current capability of the 5" Mk 45 Mod 4 gun and ranges in excess of 30 nmi. Additional range would be expected out of higher muzzle energy railguns.

The ONR HVP program will address technologies in the areas of high G launch survivability (miniaturized high-G tolerant guidance electronics and control actuation systems, militarized GPS receivers, and compact fuzing – safe & arm), high density electronics packaging and miniaturization, advanced energetics, and aero-thermal management (lightweight-high strength composite materials, heat resistive-thermal managing materials). Leveraging of related past and current technology efforts is encouraged to reduce risk and bring quantities of scale. A multi-stage program leading to full-up live fire demonstrations of the technology is anticipated.

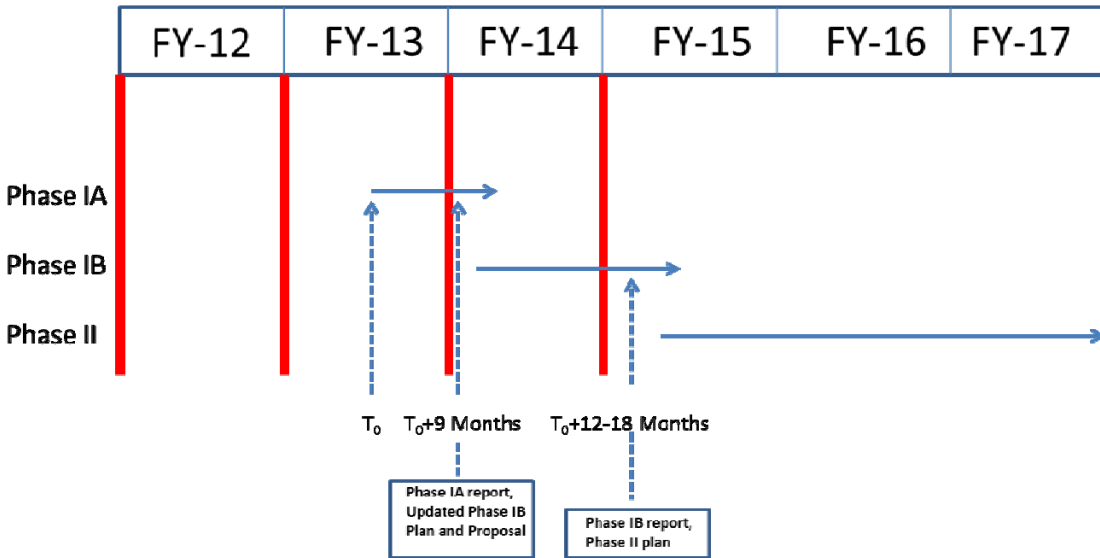
The Office of Naval Research (ONR) is interested in receiving white papers and proposals under the following two areas:

A. The design, development, fabrication, and testing of an extended range guided projectile to support the above mentioned objectives. Proposals must be submitted as a three phase approach: Phase IA, Phase IB and Phase II. ONR intends to utilize a Cost Plus Fixed Fee contract for Phase IA, Phase IB and Phase II efforts, as described below. Phase IB and Phase II efforts must be proposed as options. The Navy may award options if awardees perform successfully under previous phases. However, successful performance under a previous phase does not guarantee the exercise of an option(s).

The physical and logical system interfaces and preliminary designs of the projectile components, subsystems and assemblies to support modular hardware and software architectures are to be defined under Phase I of the program. The Navy expects that the results from Phase I will allow industry to design to common modular interfaces and provide subassemblies that are interchangeable and upgradable. The intent is to foster the development of a competitive industry base going forward and minimize the need for proprietary and sole source components and subassembly during future Engineering and Manufacturing Development (EMD) and production phases. It is expected that the fielded cost per round will be an important metric affecting design, materials, electronics and subassembly trade-offs and selection during the research phase. A government technical datasheet will be made available to successful offerers.

Program Schedule and Phases (Nominal):

Hyper Velocity Projectile Program Schedule



Phase IA - Preliminary Design and Risk Reduction

Phase IA is a nine (9) month period beginning in early FY13 that comprises the preliminary design and trade study effort and the supporting modular hardware and software architecture development. This design effort includes the low drag, high velocity projectile airframe, and sabot, guidance-navigation and control, datalink, fuzing, safe & arm, fuse setting, plus the warhead and its effectiveness. Technical risk areas will be identified to direct a spiral technology risk reduction effort (government and industry). The result will be a Phase IA design report with subsystem weight and volume allocations and model based performance predictions, and an updated Phase IB (see below) technical proposal with a proposed cost to support a Navy decision for award of the follow-on task.

Phase IB (Option) – Detailed Design, Technical Data Package, Production Plan, Test Article Development, Range Testing and Evaluation

Phase IB is a twelve (12) to eighteen (18) month period that completes the HVP detailed design and validates performance predictions with models based on component and subsystem level testing. High G survivability of selected components should be verified by appropriate modeling and live testing. The Phase concludes in the development of a design report that contains the detailed design and rationale, technical data package, and description of test articles and test and evaluation results. Based on research results under Phase I, an updated Phase II technical and cost plan is to be provided.

Phase II (Option) – HVP Prototype Development and Testing

Phase II is a thirty (30) to thirty six (36) month period ending at the end of FY17 to deliver and demonstrate HVP test articles in a realistic environment (TRL 6). An orderly progression of testing shall be conducted with test articles of increasing sophistication to retire technical risk

Special Notice 12-SN-0017

prior to live fire testing of full up test articles. In addition to test articles, a report will be prepared summarizing test results, risks retired, and areas which may require further development.

Systems Engineering

A contractor-defined (modified) systems engineering approach, appropriate for an S&T Program, should be utilized to support sufficiently the scope of the proposed phases of development and design.

B. The Office of Naval Research (ONR) is also interested in receiving innovative proposals that provide solutions for necessary critical subsystems such as guidance and electronics, control actuation systems, high strength materials and warheads for an extended range guided projectile. Subsystem proposals should offer innovative solutions to meet the HVP program objectives stated above. Proposals for these technologies should be submitted under the ONR Long-Range Broad Agency Announcement for Navy and Marine Corps Science and Technology, BAA-12-001 or follow-on long range announcement if submitted after September 2012.

III. Industry Day

A pre-proposal conference (Industry Day) will comprise an unclassified session limited to DoD organizations and DoD contractors and will be conducted on 20 AUG 2012 in Arlington, VA. Neither the Office of Naval Research (ONR) nor any other part of the federal Government will be responsible for any cost incurred by traveling to or participating in this industry day.

The purpose of the Industry Day will be to provide an opportunity for government and industry to confer on the research and development efforts associated with the Hyper Velocity Projectile program. The Navy intends to describe its Hyper Velocity Projectile program expectations, schedule, events, etc. The format of Industry Day will include presentations and the opportunity for questions. The number of contractor personnel, in any given company, allowed to attend Industry Day may be limited based upon the number of attendance requests.

ADVANCED REGISTRATION IS REQUIRED.

Companies/entities wishing to attend Industry Day must register in advance. Submit a letter of application to sarwat.chappell@navy.mil that includes information regarding your Industry Day interest and the company's (or entity's) HVP research and development capabilities, either as a prime contractor or subcontractor. Each letter of application must also contain the names of proposed personnel planning to attend, their position in the company (entity) and their contact information, including business address, telephone number and email address. There is no registration fee for participation. Industry Day application letters should be submitted no later than 03 AUG 2012. Industry Day application letters received after 03 AUG 2012 may not be reviewed for Industry Day attendance consideration.

IV. Content and Format of White Papers/Full Proposals

All proposal documentation (White Paper and Full Proposal) should address the following program phases:

Phase I (Task 1 and 2): FY-13 through FY-14

- Phase IA Preliminary Design (9 months) and Phase IB Detailed Design (12-18 months)

Phase II (Task 3): FY-15 through FY-17

- HVP Prototype Development and Testing (30 to 36 months)

A. WHITE PAPER SUBMISSION

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 ONR 2012 Research Opportunity: Hyper Velocity Projectile (HVP) Research” 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 efforts; (6) A funding plan showing requested funding per fiscal year; (7) The proposed team including subcontractors ; and (8) since some portions of this effort may be classified in nature, provide a statement of the company’s current clearance level, storage capability and facility clearance. 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 are required for all offerors seeking funding. The white papers will be evaluated in order to establish whether a contractor team appears to be fully qualified to perform the challenging work effort comprising the design and build of a high velocity projectile. Detailed Full Proposal (Technical and Cost volumes) will subsequently be encouraged from those offerors whose proposed technologies as described in their white papers have been identified as of “particular value” to the Navy. However, any such encouragement does not assure a subsequent award.

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 be submitted electronically to the program technical point of contact, Ms. Sarwat Chappell, sarwat.chappell@navy.mil . These white papers shall be in Microsoft Word or Adobe PDF format.

To ensure full, timely consideration for funding, white papers should be submitted **no later than 31 Aug 2012**. White papers received after that date will only be considered as time and availability of funding permit.

The planned date for completing the review of white papers and notification of the desire for an oral briefing/presentation is on or about **05 Sep 2012**.

B. ORAL BRIEFINGS/PRESENTATIONS

The government will not supply funding to support development of the briefing, travel to participate in the briefing, or any other expenses associated with the development of the briefing and the briefing itself. The briefing is limited to (30) minutes including questions, and authors of white papers of particular value will receive additional guidance with respect to canonical slides and information that the government desires in the oral presentation. Authors of white papers and oral presentations that the government finds of particular value will receive email notification and will be encouraged to submit a full proposal if they so wish. Authors of white papers and oral presentations for which the Navy does not find of particular value are not eligible to submit a full proposal.

The Principal Investigator shall present the oral briefing to the government.

The planned date for oral briefings/presentations is on or about **13 Sep 2012**.

C. FULL PROPOSAL SUBMISSION AND AWARD INFORMATION

Full proposals should be submitted under ONR BAA12-001 by **26 Oct 2012**. **The technical proposal shall not exceed thirty (30) pages. Under the technical content, section 4 entitled “Management Approach,” the Offeror should describe the prime and subcontractor relationships and coordination, limited to 5 pages. Resumes do not count toward the page limitation.** Full Proposals received after that date will be considered as time and availability of funding permit.

ONR anticipates that only contracts will be issued for this effort. Full proposals for contracts should be submitted in accordance with the BAA 12-001 instructions located in Section IV, Application and Submission Information, item 2.b, Full Proposals. The address for submission of full proposals will be provided following the oral briefings.

ONR plans to fund up to four Phase IA design awards with a nominal value of \$1200K per award. The period of performance for projects will be up to nine (9) months in duration. All proposers should be capable of performing classified work. After contract award, a classified session will be held to provide additional detail on targets and missions. Attendance at the classified session shall be limited to those companies that are approved government contractors with valid security clearances.

At the discretion of the government, a follow on Phase IB design effort, of up to an additional eighteen (18) months in duration, may be awarded to one of the initial Phase IA performers. ONR plans to fund up to \$6M for Phase1B and up to \$30M for the Phase II effort.

Although ONR expects the above described program plan to be executed, ONR reserves the right to make changes.

Funding decisions should be made by 31Dec 2012. Selected projects will have an estimated award date of 31 May 2013.

Any works first produced, created, or generated in the performance of this effort, including all design, configuration, and arrangement of information and documentation developed by the contractor’s personnel as a result of a resulting award, shall be the property of the U.S. Government without limitation as to usage rights. These data rights are not applicable to intellectual property such as copyrights, software licenses, or patents in existence prior to being developed at government expense.

Additional award information can be found in the governing ONR Long Range BAA 12-001 document.

V. SIGNIFICANT DATES

Special Notice Published	7/17/2012
Industry Day Letters of Application Due	8/03/2012
ONR response to those contractor accepted for Industry Day attendance	8/10/2012
Industry Day	8/20/2012
Recommended White Submission Date	8/31/2012
Oral Presentation Notifications	9/5/2012
Oral Presentations of White Papers*	9/13-14/2012
Full Proposal Notifications*	9/20/12
Q and A process stops	10/05/2012
Recommended Full Proposals Submission Date	10/26/12
Contract Awards*	5/31/2013
Kickoff Meeting	TBD

Note: * These are approximate dates.

VI. POINTS OF CONTACT

In addition to the points of contact listed in ONR BAA12-001, the specific points of contact for this announcement are listed below:

Technical Point of Contact:

Ms. Sarwat Chappell, Program Manager Hyper Velocity Projectile Program,
sarwat.chappell@navy.mil

Business Point of Contact:

Misale Abdi, Contract Specialist
Misale.abdi@navy.mil

VII. Submission of Questions

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

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/>
- (if you are not issuing grant, we should remove this because it will not be posted on grants.gov) ONR Special Notice Webpage - <http://www.onr.navy.mil/Contracts-Grants/Funding-Opportunities/Special-Notices.aspx>

Questions regarding **White Papers** should be submitted no later than 20 Aug 2012. The Navy expects to post answers to White Paper questions no later than one week before recommended submission date for White Papers.

Questions regarding **Full Proposals** should be submitted no later than three weeks before the date recommended for receipt of Full Proposals. Questions after this date may not be answered. The Navy expects to post answers to Full Proposal questions no later than two weeks before recommended submission date for Full Proposals.