

REQUEST FOR INFORMATION (RFI)
ONR RFI Announcement # 11-RFI-0008
Advanced Rotorcraft Recovery System for Shipboard Operations

I. DISCLAIMER:

This announcement constitutes a Request for Information (RFI) for the purpose of determining market capability of sources or obtaining information. It does not constitute a Request for Proposals (RFP), a Request for Quote (RFQ) or an indication that the Government will contract for any of the items and/or services discussed in this notice. Any formal solicitation that may subsequently be issued will be announced separately through Federal Business Opportunities (FedBizOpps). Information on the specific topics of interest is provided in the following sections of this announcement. Neither ONR nor any other part of the federal government will be responsible for any cost incurred by responders in furnishing this information.

II. BACKGROUND:

In today's Navy, rotary wing aircraft must be able to take-off and land in all kinds of weather and sea states during both day and night operations. In many cases the primary means for situational awareness during recovery operations are visual cues. To preserve safety, limitations are imposed with respect to wind, sea state, clearance to objects, and ship landing spots. Introduction of advanced technologies to enable assisted and/or automated take-off and landing would allow operations in a wider range of weather and increase the level of safety for the aircraft (A/C) and the ship while providing more operational flexibility for conducting missions.

The Office of Naval Research (ONR) is interested in understanding the available technologies and their combined / integrated capability to increase the safety, efficiency, and operational flexibility of rotorcraft during shipboard take-off and landing operations in extreme weather and degraded visual conditions. The intent of this RFI is to assist ONR in conducting market research to determine the availability and technological state of the art of these technologies, which should enable a rotorcraft autoland system capable of meeting the following needs:

1. Beginning from a distance of at least one nautical mile, locate the ship to be landed aboard and identify and determine the safety of the designated landing spot
2. Land the A/C with no more than a two-foot dispersion in sea state 6 with high winds from any azimuth
3. Provide acceptable ride quality for the aircrew.
4. Be completely operational on either small-deck (e.g. DDG, LCS) or large-deck (e.g. LHD, LPD) air capable Navy ships, with possible extension to any commercial air capable ship
5. Withstand extended operations in the naval environment
6. Minimize the impact to the aircraft and ship
 - a. Minimize the amount of equipment required for both¹

¹ The goal of no equipment on the ship would allow A/C operations from any ship

- b. Minimize the size/weight/power of necessary systems for both
 - c. Eliminate any interference with other systems
7. Synchronize the aircraft with ship motion for a low impact, secure landing
 8. Provide benefits for external load operations
 9. Maximize commonality with systems that can support fixed wing (e.g. F/A-18, F-35C) aircraft carrier (CVN) automated landings
 10. Maximize utility for shore based landings in brownout/degraded visual environment conditions.

Responses to this RFI will inform ONR of potential enabling technologies and help determine an appropriate development strategy. Industry and academia are requested to provide supporting data on this topic. Please include in your response information answering questions 1 & 2 below in Section III, and questions 3-5 to the extent possible:

III. SPECIFIC INFORMATION OF INTEREST:

1. Provide a description of each enabling technology component that you are suggesting could contribute to this system. Answers should include but not be limited to the function, power needs, size, weight, cooling needs, failure tolerance, system related assumptions/limitations/constraints, and field of regard of each component. Any special integration needs should also be described. Also describe where the component would be located (ship or aircraft).
2. What is the current Technology Readiness Level (TRL) of each component / technology? The Technology Readiness Assessment (TRA) Guidance document, dated April 2011 found at the following website (<http://www.acq.osd.mil/ddre/publications/docs/TRA2011.pdf>), includes TRL definitions. Use those definitions for identifying the TRL level.
3. Could an autoland system using your suggested component(s) be added to a legacy aircraft (MH-60R/S, CH-53E, MV-22B, UH-1Y, AH-1Z) given their existing stability augmentation/automatic flight control system? Would there be limitations compared to a full authority system and what would they be? Describe the extent of the modifications required to existing platforms to be compatible/compliant with the system. Would your components require a fly by wire system or would fly by wire provide benefits? What would they be?
4. Can an autoland system using your suggested component(s) handle the rigors of shipboard operations? Does the system compensate for ship motion, ship airwake, and aircraft rotorwash? Describe the compensation algorithms, if applicable.
5. Describe in detail if the autoland system using your suggested component(s) could provide pilot cueing and/or advanced control laws to lessen pilot workload for a non-autonomous ship operations mode. Explain in detail if the system could provide a benefit for external load operations.

IV. SUBMISSION INSTRUCTIONS and FORMATTING REQUIREMENTS

- a. Responses are requested by 17 October 2011 at 3pm EST. Any response received after this date will also be considered but may not be included in initial reporting or assessments.
- b. All responses should be in PDF format and emailed to the technical point of contact: **Stephen Troutman; stephen.troutman@navy.mil**. The subject line of the email should read as follows “**RFI: Advanced Rotorcraft Recovery System for Shipboard Operations**”.

Unclassified RFI Responses:

All responses must be unclassified. No classified response may be submitted. All information received in response to this RFI that is marked proprietary will be handled accordingly. Responses to this notice will not be returned.

- c. Responses should be typed in 12-point Times New Roman font, single spaced, with 1-inch margins.
- d. A suggested submission organization:
 1. Cover Sheet – RFI number and name, address, company, technical point of contact, with printed name, title, email address and date.
 2. Table of Contents with page numbers
 3. Technical data (As indicated above in Section III)

No cost or pricing information should be provided.

V. QUESTIONS AND POINT OF CONTACT

Questions of a technical nature regarding this RFI may be sent to the following Technical Point of Contacts:

Primary POC –

Name: Stephen Troutman

Organization: Advanced Aircraft Design, Naval Air Systems Command

Address: Bldg 2187, suite 1180, 48110 Shaw Road, Patuxent River, MD 20670

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Secondary POC –

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