

Special Notice 13-SN-0015 Amendment 0002

Special Program Announcement for 2013 Office of Naval Research Research Opportunity: “Development of Noise Prediction Design Tools for Future Multi-Stream, Low-Noise Tactical Aircraft (TACAIR) Engine Exhausts”

The purpose of this amendment is to respond to questions submitted from 3/19/2013 through 3/27/2013. Questions received after 3/27/2013 will be address in a subsequent amendment. This amendment includes the entire Special Notice. Industry Questions and Answer are provided as follows:

Question 1: What are the nozzle geometries of interest?

The nozzle geometries of interest are those that accommodate two- and three-stream engine/nozzle architectures including round co-annular and non-co-annular nozzles as well as non-round, vehicle-integrated nozzle configurations. Additionally, the Special Notice states that the proposal should discuss the relevance of the proposed experiments to future tactical aircraft configurations and should address model configurations. The nozzle geometry selection should be based on these criteria and the proposal should discuss the relevance of the proposed nozzle configurations.

Question 2: Do the flow conditions require heated jets? Are simulated heated jets acceptable, such as helium/ air mixtures?

The proposal should discuss the relevance of the proposed experiments to potential future tactical aircraft configurations and should address jet flow regimes. A decision to use heat or simulated heat should be addressed in the proposal in a manner that satisfies the requirements of the Special Notice.

Question 3: Can you provide any more specifics on bypass flow injection locations, temperature ratios and bypass stream flow ratios?

The datasets and prediction models/tools in the proposed effort should address noise levels for relevant jet conditions at locations on the carrier deck and in the far-field where community noise is an issue. Additionally, the Special Notice states that the proposed effort should focus on models/tools that could be used in future tactical aircraft system studies. The selection of bypass flow location, mass flow rates, and temperature ratios should be based on satisfying those conditions.

Question 4: What should the extent of the test matrix be in terms of number of nozzle geometries, variables and test points?

An objective of the desired effort described in the Special Notice is to acquire a relevant dataset that can be used to develop and validate engineering design tools for use in future tactical aircraft system studies. As such, the proposal should discuss the relevance of the proposed experiments to potential future tactical aircraft configurations. The size of the test matrix will be based on the requirement to meet this objective.

Question 5: Is the Special Notice intended to result in a standalone computer model product like NASA’s ANOPP code?

The Special Notice is not intended to develop a product such as NASA’s Aircraft Noise Prediction Program which includes far more than jet-noise prediction tools. The intent of the Special Notice is to acquire validated models/tools based on relevant experimental data that could be used for predicting jet noise of future tactical aircraft in system level studies.

Question 6: Is the interest of the Special Notice to develop a validated fast screening tool built from physical concepts or a look-up table of information based on extensive testing?

The intent of the Special Notice is to acquire validated models/tools based on relevant experimental data that could be used for predicting jet noise of future tactical aircraft in system level studies. The selected approach to accomplish this is left to the Proposer.

I. INTRODUCTION

This announcement describes a research thrust entitled, “Development of Noise Prediction Design Tools for Future Multi-Stream, Low-Noise Tactical Aircraft (TACAIR) Engine Exhausts,” to be launched under the ONRBAA13-001, 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 1 of the “Naval Air Warfare and Weapons (Code 35)” sub-section. The submission of 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, and (2) the planned timetable for the submission of proposals.

II. TOPIC DESCRIPTION

Noise generated by TACAIR engines is an acute noise source and is a concern of the Department of the Navy. Historically, TACAIR engine performance requirements have increased without accompanying noise-reduction requirements, a trend which has resulted in increased noise challenges for the Navy. An understanding of the trades between performance and noise requires data acquired at relevant jet conditions using nozzle geometries of interest. The ability to effectively utilize the knowledge gained requires engineering design tools for noise-prediction validated with relevant acoustic datasets. The program will pursue the acquisition of acoustic data and development of engineering design noise-prediction tools/models for potential future tactical aircraft engine/nozzle architectures.

Objective:

The Office of Naval Research is seeking proposals that address both (1) the acquisition of noise data for multi-stream, hot, supersonic jets issuing from relevant, complex nozzle geometries and (2) the development and validation (using noise data acquired in (1)) of engineering design

models/tools for noise prediction that could be used in future tactical aircraft system studies. The datasets and prediction models should address noise levels for relevant jet conditions at locations on the carrier deck and in the far-field where community noise is an issue. The nozzle geometries of interest are those that accommodate two-and three-stream engine/nozzle architectures including round co-annular and non-co-annular nozzles as well as non-round, vehicle-integrated nozzle configurations. The studies are not intended to include propulsion-airframe interactions. Relevant jet conditions include representative carrier-deck takeoff conditions and an appropriate range of engine cycle conditions expected for operations around airbases. The engineering design tools/models should be computationally efficient and intended for use in system trade studies where a large number of configurations must be evaluated.

Proposals should discuss the relevance of the proposed experiments to potential future tactical aircraft configurations and should address model scale, model configurations, facility size, jet flow regimes, data repeatability, and how the acquired data will feed noise-prediction tools/model development. Tool/model development efforts should address the expected inputs and their levels of fidelity required to achieve suitable predictions and limitations resulting from assumptions or methodologies utilized in the tool. Proposals should address all aspects of the statement of objectives including database acquisition and tool/model development. Proposals should address any data restrictions in the Deliverables section of the proposal. While unlimited data rights are preferred, Government Purpose Rights will be considered with appropriate justification.

III. FULL PROPOSAL SUBMISSION AND AWARD INFORMATION

Full proposals should be submitted under **ONRBAA13-001** by **April 26, 2013**. Full Proposals received after that date will be considered as time and availability of funding permit.

ONR anticipates that contracts will be issued for this effort.

Full proposals for contracts should be submitted in accordance with the instructions at Section IV, Application and Submission Information, item 2.b.i, Instructions for Contracts, Cooperative Agreements and Other Transaction Agreements. The Technical Proposal/Content should not exceed 25 pages. The cover page, resumes, bibliographies, and table of contents are excluded in the page count. For contract proposal submission, two (2) hardcopies and one (1) electronic submission on CD-ROM are requested.

ONR plans to fund one award between \$200,000 - \$600,000 per year using research funds. However, lower and higher cost proposals will be considered. Although ONR expects the above described program plan to be executed, ONR reserves the right to modify these plans including the right to make no award.

The period of performance for projects is expected to be three years.

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

VI. SIGNIFICANT DATES AND TIMES

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Event	Date	Time
Recommended Full Proposal Submission	April 26 2013	4:00 p.m. ET
Notification of Selection: Full Proposals *	May 31, 2013	4:00 p.m. ET
Awards *	October 2013	None

Note: * These are approximate dates.

VII. 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:

Dr. Joseph Doychak, Program Officer, Code 35, joseph.doychak@navy.mil

Business Point of Contact:

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

VIII. ADDRESS FOR THE SUBMISSION OF WHITE PAPERS AND FULL PROPOSALS FOR CONTRACTS

The DVD or CD-ROM of the Full Proposal including all supporting documentation should be sent to the Office of Naval Research at the following address:

Point of Contact
Office of Naval Research Attn: Dr. Joseph Doychak ONR Department Code 351 875 North Randolph Street – Suite 1128 Arlington, VA 22203-1995

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 may 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/>
- ONR Special Notice Webpage - <http://www.onr.navy.mil/Contracts-Grants/Funding-Opportunities/Special-Notices.aspx>

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