

Questions Received for BAA 09-013 (Component Development for Advanced Shipboard Desalination) through 16 March 2009

1. It seems ONR is looking for pretty practical, almost pilot level systems to evaluate, without much room for basic research. Is this accurate?

A: The BAA development is mainly focused on component development categorized as 6.2 and 6.3 R&D type of efforts. It is not focused on the basic 6.1-type research area. However if some of the concepts/technologies developed by your organization could be matured within an 18 month period then I would encourage you to submit. Also check out the ONR website www.onr.navy.mil/02/baa which lists all the other R&D efforts being solicited.

2. We are planning to submit a white paper for the Broad Agency Announcement "Component Development for Advanced Shipboard Desalination Systems". Our technology could encompass two of the specific areas of interest namely:
6.2 Advanced Chemical Pretreatment Enhancements
6.3 Advanced Reverse Osmosis Membranes
Should we submit two separate papers or only one encompassing the two aspects?

A: If you are developing a single technology that covers both areas, then you should only submit one white paper. If you are developing two distinct technologies, one for area 6.2 and one for area 6.3, then you should submit two white papers.

3. What is the size of the RO membrane module that should be ready for government testing within 18 months of award? For example, 4" OD x 40" length module, a 4" OD x 20" length module, or other size?

A: We have capability and prefer to test 4" OD x 40" long modules, however, we may be able to accommodate membrane modules of other sizes. Please contact us further if you would like to utilize an alternative size, as modifications to test equipment may be necessary.

4. Is sensor development encouraged under section 6.5, "Alternative Approaches, Miscellaneous Enhancements" of BAA 09-013?

A: Yes, the development of water quality sensors is encouraged under this section of the BAA. The objectives of the sensors should be to enhance operation and permit diagnostics of the desalination system, and align with the program goals as defined in the BAA. Sensors that do not specifically enhance the operations of the desalination system, although valuable, are not within the scope of this particular BAA. Additional ONR research opportunities may be found on the ONR website at <http://www.onr.navy.mil/02/baa>.

5. If my process requires air for operation (compressed or ambient pressure), what options are available in the testing facilities and a shipboard environment?

A: The utilities available at the government testing facilities may be seen in the 'Industry Day' brief, on pages 119 through 145. Ambient and low pressure air systems (130 psi) are available in a shipboard environment.

6. What is an acceptable scale / level of water production for the unit to be delivered after 18 months?

A: The prototype device to be delivered after 18 months should be at a sufficient size to readily demonstrate the process as well as be easily scaled to the eventual shipboard size of 12,000 gpd.

7. Is low-grade waste heat readily available for the desalination operation?

A: The availability of waste heat depends on the type of ship class in question. If a heating source is required for the operation of your technology, it is preferred that you provide it as part of the prototype system to be delivered after 18 months.

8. How significant are the following factors in designing the desalination system/process?

Thermal signature (or other) of the discharges/exhausts.
Produced water quality. Any specifications?
Energy efficiency vs size

- A: For the purpose of this BAA, the thermal signature (or other) of the discharges / exhausts is not significant. It may, however, may become an important consideration when developed systems are built after the conclusion of this BAA. The product water specifications are referenced in the Industry Day Talks (Page 74). Although energy efficiency is important (see also the following question on energy efficiency), the size is more of an important consideration. Effluent discharges that are different from the feed seawater need to be identified in the proposal for test site discharge considerations.

9. What developmental efforts have been undertaken with respect to evaluation of commercial products, especially in terms of automated screens and evaluation of seawater materials? What type of cyclone separator does the Army employ on the 1500 GPH TWPS?

A: The Navy has done pilot, field, and shipboard testing of commercial products including automated screens and seawater materials. The majority of the commercial units evaluated, while they operated well in the open ocean, experienced problems closer to shore. The materials of construction of many of the tested products were not completely compatible with seawater, and as a result, experienced premature degradation. The Army's TWPS is equipped with a Lakos IL-0150-S cyclone separator. The Navy is interested in self-cleaning filtration devices that have low maintenance requirements and enhanced removal capabilities over the conventional techniques.

10. Can you tell me whether the centrifugal separator as depicted in your figure shown in your presentation as seen in Industry Day is a COTS article? If so, could you give me the vendor and part number, so that I can get specifications on it as well as what we can expect downstream of the device? And is it to be part of the prototype we are to furnish?

A: The centrifugal separator on the Navy Standard RO is made specifically for the Navy. The NSRO separator removes 95% of all particles greater than or equal to 50 microns in size at a maximum pressure drop of 25 psid across the separator. This separator basically removes heavy particles that are roughly 1.5x or greater than the specific gravity of water. There will not be a separate centrifugal separator available during the prototype testing. If your technology requires the use of a centrifugal separator for operation, it should be provided as a part of the prototype delivered for testing.

11. What are the current energy requirements for a shipboard desalination system, and how does that compare to the energy requirements of an entire ship?

A: The energy requirements for a shipboard desalination system is small relative to the energy requirements for an entire ship. We expect that the energy requirements for components developed under this BAA will be less than or equal to 30 kW/kgal. Energy efficiency is not the primary driver for system design, as system size is of greater significance.

12. Where does one go to get a detailed view of current equipment/practice?
We'd like to be able estimate the energy and weight savings with new technology options.

A: The current Navy equipment / practice is described in Industry Day Presentations, available on the ONR website, <http://www.onr.navy.mil/02/baa> under BAA 09-013, "Industry Day", under "Current Navy Desalination Capabilities".

13. Regarding chemical pretreatment and prefiltration, does the Navy use just one "recipe" or is there an on-board expert adjusting the chemistry? What recipes are in use? Different foulants will respond differently to different treatments. The variability in littoral environments might call for some ability to adjust the pretreatment.

A: Chemical pretreatment or enhancement is not currently used in the NSRO, however, under this BAA, we are interested in safe, reliable alternatives if enhanced performance and operation is gained. If chemical addition enhances operation of the desalination system, it is desired to have future systems work with minimal manning and desire a system that could treat most waters without manual adjustment.

14. What prefiltration has the feedwater gone through prior to introduction to the desalination system?

A: Prior to introduction to the desalination system, the seawater has passed through a screen of 1/8" mesh, used to prevent the intake of fish, very large particles (rocks), and other debris. When the seawater enters the desalination system, it is then treated with the centrifugal separator (see previous question), and the 20 and 3 micron filters.

15. I am preparing a white paper in response to BAA 09-13. I have a question on the white paper to clarify with you. On page10, the 5th line from the bottom: "The cover page shall be signed by an authorized officer." I am not clear who is the "authorized officer." Since only electronic submission is required for the white paper, does that mean I need to scan the signed cover page and combine it with the rest and send them to you by email?

A. The authorized officer is the individual with the authorization to make a business commitment for your business or university. Customarily, that would be the Contracts Manager or Vice President of Finance.